

AMATEUR RADIO

NOVEMBER 1963



Vol. 31, No. 11



2/-

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FT 4549	DC 5170	DC 5700	DC 6021.1	LP 6547.9	LP 7270	DC 8469.23
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OUR COVER

For full details of this month's
cover photograph refer to Single
Sideband on 432 Mc. on page 15.

FEDERAL COMMENT

★

In April 1963 the Secretary-General, International Telecommunications
Union, Geneva, invited the Australian Government, together with all
member administrations, to send a delegation to the Extra-ordinary Admin-
istrative Radio Conference to allocate bands for Space Radio communi-
cation purposes which opened in Geneva on 7th October this year.

To deal with problems which will arise as a result of proposals for
frequency allocations for the Space Service, Postmaster-General Davidson
formed a special Ad Hoc Committee to which the Wireless Institute of
Australia was invited as a voting member representing the Amateur Service.

Known as the Radio Frequency Allocation (Space Service) Committee
it has worked over the past many months to determine the brief for the
Australian Delegation to Geneva. At the numerous meetings held in Mel-
bourne and Canberra, the Wireless Institute of Australia has been rep-
resented by Mr. Arthur Ernest Tinkler, VK3ZV, whose expenses have been
paid by the Government.

As a result of his expert co-operation and his knowledge of the prob-
lems involved during the deliberations of this Committee, the Government
invited the W.I.A. to send an observer representative with the Australian
Delegation to Geneva. This was accepted and after discussions with
Federal Executive, Mr. Tinkler undertook the representation of the
Amateur Service at the Conference.

Deliberations in respect of the Space Service requirements involved
many services and therefore of necessity the activities of the Committee
were of a restricted nature. However, through its representative the Wire-
less Institute of Australia kept close watch on the problems involving our
v.h.f. and u.h.f. assignments and, at the final meeting of the Committee,
the status quo was maintained.

Never before has the world-wide Amateur Service faced such problems
relative to its frequency assignments as it has faced in the last decade and
it must expect to face even greater problems in the future. To deal with
these problems representation at Government level is imperative and it is
the role of the Wireless Institute of Australia to act for the VK Amateurs.
The Institute has pledged itself to do this with all its might despite oppo-
sition from mis-informed sources, contending that it is unable to do anything
effective. It has successfully campaigned to have representation at Gov-
ernment level on frequency allocation committees and the work of its
representative has been praised by responsible officials. Because its mem-
bers belong to a Service with quite wide overall frequency allocations it
is in the best interests of all other frequency users that the Institute plays
its effective part in formulating any plan for the successful engineering of
the frequency spectrum on an equitable basis.

To say that the Institute can do nothing about Amateur problems is
foolish. To say that it should do everything in its power to protect the
Amateur frequency allocations is realistic thinking! The ill-informed few
who say we are unable to do anything would be the first to say . . .
"why didn't the W.I.A. do something?" . . . if the future wrecked our chances
and we indeed had done nothing!

FEDERAL EXECUTIVE, W.I.A.

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Modification of the 522 Equipment for F.M. Operation

Part Two—THE RECEIVER

E. C. MANIFOLD,* VK3EM

THIS section has, in the past, been rather neglected, mainly due to the lack of selectivity for a.m. use without a good deal of work being done to improve this fault. (A fault so far as Ham's are concerned, but satisfactory for the original purpose.)

This still applies, but to a lesser degree, since we want a bandwidth of approximately 30 Kc. to accommodate the f.m. deviation in present use on 145 Mc.

R.F. AND MIXER SECTIONS

The modification follows the suggestions in "QST" a few years ago by Robert E. Fairbrother, WIPYO ("QST," April 1949).

The 9003s in r.f. and mixer valve sockets are removed and replaced with 6AK5s, but this is not the only story as the 6AK5s will "take off" so it will be necessary to alter the front end as follows.

Remove the front end r.f. and mixer sub-chassis from the set and remove stator and rotor plates, leaving two stator plates and one rotor plate in each section, which will give a tuning range of 120 to 130 Mc. with the trimmers fully in, and 135 to 165 Mc. with the trimmers fully out, so don't be timid about removing the plates.

It is important that you exercise great care when doing this because the fragile ceramic rotor shaft is easily broken.

Removal of Condenser Plates

After finding that there have been some of the local Hams that have tried to remove plates from this tuning gang and broken the shaft, it was thought that it might be a good idea if these notes were included to assist and to help avoid the breakages that have been experienced.

The actual removal, though being a bit difficult, is mainly a matter of care and patience, the technique being quite simple.

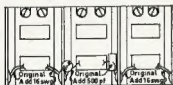


Fig. 1. Extra earthing & bypass on RF & Mixer tuning gang.

First remove the tuning gang from the chassis so as to get at both sides of the stator plates with ease. The rotor is turned to the opposite side stator section and work is commenced on the cleared stator section.

Take a sharp, narrow pair of sidecutters and insert the points only of the blades between the outer plates and snip through the top support bar. The correct side of the sidecutters to use

will be seen after the first section of the bar is cut, as one side of the cutters will not affect the rest of the plates and will leave the bar holding the remaining plates firmly.

This allows the first plate to be spread from the others with a screwdriver, then take the long-nosed pliers, push them right down as far as possible and grip the plate firmly, proceed to twist the pliers, side to side, until the solder at the base gives away.

Treat each plate separately until there are two plates left at the centre of the gang, on opposite sides, corresponding to each other.

Alternatively, a small fretsaw or jeweller's saw may be used to cut through each part of the support bars before removal of each plate.

Now the ticklish operation of removing rotor plates is tackled. Turn the rotor plates until the centre of the plates are facing outwards, clear of both stator plates.

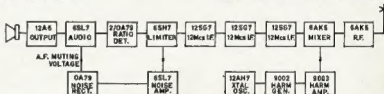


Fig. 2. Block diagram of single conversion.

Gently push a screwdriver down between the outer plates and spread the outside plate far enough from the other to slip the long-nosed pliers at least half way down the plate.

Grip the plate with the pliers firmly and start to twist the plate with the pliers gently, side to side, a little at a time, increasing the movement as the solder starts to break away at the points of the rotor plate where soldered to the metal section around the ceramic shaft.

To avoid too much strain on the ceramic shaft while this operation is being done, the gang should be held in the hand, the fingers gripping the remaining plates at the sides while twisting. This will assist in taking the pressure off the ceramic section of the shaft.

It is not advisable to hold the gang in a vise as it is easier to feel how much pressure is being applied when the gang is hand-held.

With care in the initial stages, one gets the feel of how well the plates come out, but be patient until you remove one or two plates, or you will find that there is no need to remove any more plates if the shaft gives up the struggle. There are few replacements to be obtained to try on again.

Continue with the removal of the rotor plates until there is but one plate in each section of the gang, corresponding to the two remaining plates in the stators.

The gang can then be replaced in the chassis and all connections remade, although it is a good idea to do all the modifications to the ant., r.f. and mixer sections by replacing the coils, etc., at the same time as this part, while out and easy to get at.

From remarks heard passed on occasions, it seems that there have been quite a few casualties when attempting to do this job, but by using this method there have been three modifications done at this QTH without a failure to date.

Should you be unfortunate enough to break the ceramic shaft when attempting to remove the rotor plates, it would be satisfactory to only use the trimmers to peak the coils if only one channel operation was required, but it may be found that for more than one channel a compromise tuning would have to be made. Since this has not arisen to date at this QTH, it is a suggestion which may be of some use. I hope that you don't have to apply it.

(Do not alter the two-gang section containing the 9002 and 9003 harmonic generator and harmonic amplifier.)

Replace the existing two-turn coils in each section with three turns of 16 s.w.g. tinned, or preferably silver plated copper wire, and the original aerial coil with two turns of similar wire, taking care to observe the original winding direction and spacing, as this is important.

Remove the original r.f. and mixer grid coupling condensers and resistors and replace with the smallest 33 pF. ceramic condensers available, to be connected between the valve pin lug and the gang coil mounting pillar. Reconnect the original grid resistor across this condenser, both with the shortest leads possible.

By-pass the r.f. cathode resistor with the 680 pF. condenser removed from the a.v.c. line which is now earthed.

Remove the existing r.f. screen dropping resistor and replace with 15K, 1 watt, for the 6AK5.

It will be noted that there is an existing earth connection from the tuning gang sections to frame at aerial, r.f. and mixer positions, as shown in Fig. 1. An additional earthing wire must be added as shown, together with a 500 pF. by-pass for the r.f. plate section, using leads as short as possible in each position.

Remove the mixer cathode resistor and short the valve pin lug as direct as possible to frame (earth).

*287 Jasper Road, McKinnon, Vic.

The existing plate decoupling resistor for the mixer is removed and is replaced with two 20K, 1 watt, parallel resistors as common dropping decoupling resistance for the mixer and r.f. stages, to provide 150v. maximum. This resistor may be subject to variation depending on the h.t. voltage available. These modifications will provide a sensitive and stable front end with approximately 10 to 12 db. gain over the original 9003s.

Two versions of this modification have been made, single and double conversions, the single conversion being the original 12 Mc. i.f. amplifier with the addition of a limiter, ratio detector, noise amplifier and rectifier (for muting), and altered audio section. See Fig. 2 for block diagram.

Which i.f. amplifier you decide on is a matter of choice, or requirement, but it can be said that the double conversion is very much better than the single conversion as it is possible to achieve 1 μ V. sensitivity with the double conversion as against 3 μ V. for the single conversion at 145 Mc.

12 Mc. Version

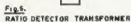
All by-pass condensers and resistors are removed from the a.v.c. connection on each i.f. transformer and this point is earthed by securing a solder lug under the nearest can-securing nut and soldering to the i.f. connecting pin, with the exception of the limiter grid which should be wired as shown in Fig. 4.

It was also found necessary to increase the values of the second i.f. valve cathode resistor to 400 ohms to prevent instability. Care should be taken to decouple and by-pass h.t. leads if instability is experienced.



For operating, set the muting pot. just at the edge of muting which will ensure that the receiver will unmute with a weak signal. Screwing this control up too far will bias the audio valve well over cut-off and weak signals will be missed.

The ratio detector transformer is made from an old pattern 1½" square can 455 Kc. i.f., stripped of the original windings and condensers, and re-wound to the following details and connections, as shown in Fig. 5 for both the 4.4 Mc. and 12 Mc. versions.

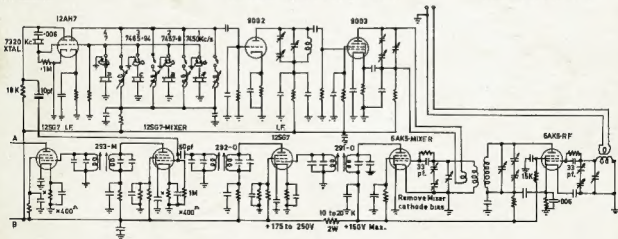


Secondary capacitor: 50 pF, mica.

Coil spacing: Primary to secondary,
5/16".

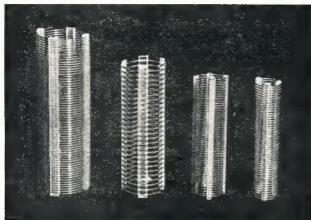
mV. input.)
(Continued on Page 14)

(Continued on Page 14)



MODIFICATION TO 522 RECEIVER FOR F.M. OPERATION

AIR-WOUND INDUCTANCES



No.	Diam.	Turns per Inch	Length	B. & W. Equiv.	Price
1-08	$\frac{1}{8}$ "	8	3"	No. 3002	5/3
1-16	$\frac{1}{16}$ "	16	3"	No. 3003	5/3
2-08	$\frac{2}{8}$ "	8	3"	No. 3006	6/3
2-16	$\frac{2}{16}$ "	16	3"	No. 3007	6/3
3-08	$\frac{3}{8}$ "	8	3"	No. 3010	7/4
3-16	$\frac{3}{16}$ "	16	3"	No. 3011	7/4
4-08	$\frac{4}{8}$ "	8	3"	No. 3014	8/5
4-16	$\frac{4}{16}$ "	16	3"	No. 3015	8/5
5-08	$\frac{5}{8}$ "	8	4"	No. 3018	10/6
5-16	$\frac{5}{16}$ "	16	4"	No. 3019	10/6
8-10	2"	10	4"	No. 3907	13/9

SPECIAL ANTENNA ALL-BAND TUNER INDUCTANCE (equivalent B. & W. No. 3907-7")

7" length, 2" diameter, 10 turns per inch, 24/6

References: A.R.R.L. Handbook, 1961; "QST," March 1959;
"Amateur Radio," December 1959.

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C. G. HARVEY,* VSIAU (Ex VK3UO, VK2AQU)

A FEW years ago I described a simple home-grown phasing transmitter. The article created sufficient interest to tempt me to record a further stage in development.

The phasing rig, crowded on to a Command chassis, provided about 4,000 wonderful QSOs with very few reports below Q5, even when signals were down to S3. Its only component failures have been open-circuit AN54 and AN54A audio transformer primaries. After failure of a third set of transformers, I decided the time had come to try a different method of producing s.s.b.s.c.

This was not due to dissatisfaction with the phasing method, which has really done a wonderful job, and has not been temperamental, as is sometimes alleged. Certainly there is a need to adjust the carrier suppression frequently, but this is such a simple matter that it does not constitute grounds for abandoning the method.

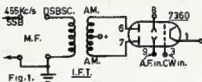
Providing a c.r.o. is available initially, it is child's play to adjust the r.f. phase shift network which, in my experience, will then stay adjusted for a very long time. VK2AQU even survived a rough road and sea journey from the Blue Mountains to Singapore without readjustment! Readers may also recall some tests on a crystal lattice filter which were published in 1961. Whilst this work was educational, it was a slow business to run curves and plot the results. Even more fiddle seemed necessary, if I was to achieve the classical passband in the Handbooks. I know it can be done, and probably with lots of patience and a stock of cheap crystals, one might settle for this method. However, when an opportunity arose to try the brute-force mechanical filter* method, I needed little convincing that this was probably the simplest and most effective method. Perhaps it is not the cheapest, but then the time comes when one is prepared to trade time in the workshop and the smell of hot resin for time on the air, operating convenience, and reliability.

The object of the 1963 programme, therefore, was to simplify and improve the s.s.b. exciter, reduce its size and power requirements, and investigate the heresy of transceiving. So, as a result, instead of using eleven tubes to get three watts, I now use five, and reports from stations who have got to know VSIAU/VK2AQU say that the signal is noticeably clearer and takes up less space on the band just like the book said it would.

Now there is a lot of waffle talked about the amount of carrier and unwanted sideband suppression needed. The jargon is impressive, but I know it has been responsible for frightening

some chaps away from s.b. They feel the technicalities of getting that last db. of suppression are beyond their mental or workshop capability, and that as a result their signal will be poor and they may be unable to effect a remedy.

The facts of life at present are that unless you live in a crowded Amateur community where signals are consistently way over S9, it matters little whether or not your carrier suppression is fair or exceptional! As for the unwanted sideband, any half-way decent receiver hacks off the unwanted sideband whether it is transmitted or not.



The fact that we still tolerate a.m. and double sideband signals is good evidence that perfect suppression of the unused sideband is not essential. Don't get me wrong. Rotten sideband is as objectionable as chirps, yoops and splatter. But there is a happy medium where an s.s.b. signal which might only be graded fair in the laboratory is quite acceptable and probably not noticeably different to its neighbours on the Amateur DX bands. Certainly a signal has to be poor to cause comment. I'll be surprised if you draw fire even when you insert, accidentally or otherwise, a lot of carrier, or degrade the unused sideband.

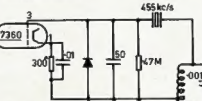


Fig. 2. The addition of a few components to the balanced modulator enables the grid-cathode to become the carrier generator circuit.

Proof? Sure! VSIAU has often necessarily operated in such conditions for longer than I care to admit, and has drawn only an occasional comment, usually from stations equipped with commercial gear and c.r.o.s. (Note carefully: the same lack of reaction will not however be found if you attempt to overdrive!) Nevertheless, for the good of the sport, the radiates signals should be as close as possible (within reason) to the current state of the art.

Because financial and technical considerations exist, one cannot expect a

rank beginner to indulge in double conversion multiband transceivers with optimum specifications. My phasing exciter cost less than the new mechanical filter alone, and this consideration may well be sufficient to justify the use of a phase shift network exciter instead. In deciding how far to go, the rule of thumb seems to be that the necessity for really good suppression increases with the quantity, proximity and tolerance of other Amateurs, and is closely related to frequency! What is A-OK on 14 Mc., may make your ears burn on 35.

Now to some simple sideband practice. The split beam penthode family of tubes like the 6AR8 and the 7360 now make possible a very simple balanced modulator in which to mix the carrier and audio, and suppress the carrier.

By adding a mechanical filter, the unused sideband can be very effectively removed and really good, stable, reliable s.s.b.s.c. obtained. Unfortunately, however, it must be on the frequency determined by the mechanical filter, a nominal 455 kc.

The addition of a few components in the grid-cathode circuitry of a 7360 provides a simple carrier oscillator without the need for an extra tube. Carrier suppression can be obtained by balancing either, or both, the anode and deflection plate circuits.

At this point let me stress the need for shielding and decoupling which is effective at 455 kc. If the carrier generator radiates, it will probably get into the receiver i.f. strip and make like a b.f.o. This may be just what is needed in a single-band transceiver, but it will also cause you some bother when you try to copy the other sideband.

Similarly the 455 kc. carrier can leak around the mechanical filter and spoil the bottom of its nice steep skirts. You probably won't notice it on the air, but the effect is easily measured with appropriate apparatus.

Better button-up the oscillator section in such a way that the output of the mechanical filter is far removed from the oscillator section, and from the power supply leading to it. In my experience, it is a lot easier to put shields in before you start wiring than afterwards.

Make no mistake about the excellence of suppression of the unused sideband by a mechanical filter. Also it is fixed and cannot suffer from maladjustment. Just provide a stable carrier oscillator which sits on the 60 db. point of the skirt and even when signals are S9 plus, the fellows won't be able to hear anything on the unused side of your suppressed carrier frequency. To change sidebands, just swap the carrier generator on to a similar position on the other skirt. Alternatively, swap the v.f.o. on to the other

* Hq. Far East Air Force, R.A.F., Changi, Singapore 17.

1 Kokusai MP455/16K.

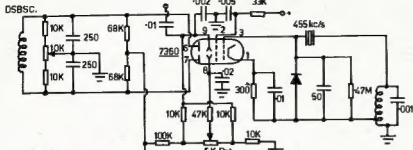


Fig. 3. Carrier Oscillator & Balanced Modulator (QST March 1960)

side of the transmitter i.f. The crystal method is easier, and helps to sustain v.f.o. stability, by eliminating switching and unnecessary leads in a self-excited stage.

Choice of proper carrier insertion frequencies is simple too. It comes marked on the graph supplied with every Kokusal filter. It is not critical providing you realize that you can be changed into a soprano (or bass) if the frequency used is too far from optimum.

The classical "QST" circuit (March 1960) for a combined carrier oscillator and balanced modulator is shown at Fig. 3. It works very nicely, but can be simplified considerably without noticeable effect.

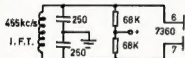


Fig. 4.

First Simplification: Result, r.f. output up by 80%, carrier balance only slightly degraded.

The obvious places to start simplification are in the plate balance circuitry (see Figs. 4 and 5) and in the deflection circuitry (Fig. 6). The arrangement in Fig. 5 is suitable for those with Collins filters. The input to the Kokusal filter is capacitatively unbalanced, and will prevent you getting carrier suppression. The cure is to use an i.f. transformer between the 250 pF. capacitors and the mechanical filter.

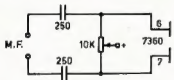


Fig. 5.

Instead of applying lop-sided audio to the deflection plates as in Fig. 3, we can easily use half a 12AX7 as a conventional phase splitter, and so avoid having to d.c. balance the deflection anodes.

The savings over Fig. 3 amount to one i.f.t., one pot., eight resistors and two capacitors, with no obvious change in performance. Also, the whole s.b. generator fits on an empty 1/2 lb. tin of chocolates, consumed during the planning stages!

Those of you who still use aluminum for chassis, might care to consider the use of tin plate instead. A chocolate tin demonstrates the advantages well. Firstly, by-pass capacitors and shields can be tacked to the chassis exactly where required, proper shielding can be accomplished by soldering the edges of the shield so that there are no r.f. leaks and, of course, feed-through capacitors can be quickly soldered in place without cooking the coaxial insulators. There is another advantage too, if the tin snips are missing, the XYLs scissors will cut tin plate quite nicely, and without subsequent comment!

We now have the problem of getting the 455 kc. s.b.s.c. into an Amateur band. This is quite easy, once the mental stumbling block of having mixers in transmitters as well as receivers, is overcome. Although a double conversion transmitter doesn't seem quite right, it is just another application of basic principles, which will work if given half a chance.

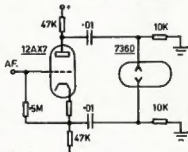


Fig. 6.

Delete d.c. carrier suppression balance voltage and substitute push-pull audio from conventional phase splitter.

In the present single band exciter, I elected to use single conversion from 455 kc. to 14 Mc. Now the greybeards will tell you that you shouldn't do this, because the demon "image response" will get you, outside the Amateur bands too. Well, it might, if you are unlucky with stray C, or careless with Q. Providing you use reasonably sensible with tuned circuitry after the mixer, keep the v.f.o. injection down to sensible levels, and don't overdrive, the chances are that, like me, you won't have any trace of the unwanted image audible in the shack, let alone down the street. The secret is in having sufficient unloaded tuned circuits after

the mixer, which can attenuate an image 910 kc. from signal frequency.

Now with a fixed carrier generator frequency, the v.f.o. injection oscillator decides whether or not you will appear on upper or lower sideband. If you put the v.f.o. on the low side of the 14 Mc. band, and use a 456.4 kc. carrier crystal, you will produce 14 Mc. upper sideband. If you put the v.f.o. on the high side, you will be in for a lonely time, as lower sideband is not used or 14 Mc. without prior arrangement.

If your station receiver happens to have a 455 kc. i.f., it is likely that the local oscillator is also set on the low side of 14 Mc. If so, all that is needed to transceive is length of coax and a small coupling capacitor to the receiver local oscillator. You are then in the transceive business—providing you arrange to mute the receiver when transmitting. This concept can be developed in a number of ways (Fig. 7), but has one shortcoming which is serious.

Unless you can arrange to mechanically or electrically limit the receiver coverage to the Amateur bands, the time will come when an inadvertent out-of-band transmission occurs. This is almost inevitable if the station is vox equipped. Fortunately, my Super Pro receiver now has so much bandwidth that it does not cover the whole of 14 Mc. in one sweep. Consequently, although still possible, the chance of out-of-band transmission is much reduced. If you do decide to use the station receiver local oscillator, which after all is already calibrated, voltage-stabilised and acceptably stable, I suggest you arrange to mark the receiver dial in some way which alerts you when the transmitter, as well as the receiver, is tuned outside an authorised band.

You may feel that extracting some injection voltage from the receiver will degrade the receiver. Most receiver oscillators have loads of oscillator r.f. to spare, and if you take care where and how you pick it off, capacitive loading can be negligible. If necessary, a cathode follower, or a simple valve or transistor isolating stage can be used if distances between the transmitter exciter and receiver are to be large. Due to the extra C, there will be some effect on the receiver's frequency, but the oscillator trimmer and slug can be used to put the calibration back where they were originally. A minor complication with this system is that unless the mechanical filter passband and the receiver i.f. passband coincide, reception will not occur exactly on the transmitted frequency, and vice versa. Again, this is not critical, because within reasonable limits the receiver b.f.o. frequency can be juggled to take out minor discrepancies.

Personally, I have come to the conclusion that a separate filter in the receiver is a better proposition than using the same mechanical filter for reception and transmission.

The addition of extra connections for the dual role increases the stray C and degrades the isolation across the mechanical filter, and hence rolls its adjacent channel rejection capability. Whilst not going as far as saying two filters are essential, for the present I prefer to retain a simple crystal half lattice in the receiver i.f. strip and bask in the luxury of good transmitted

s.s.b. There will be some who say to do it the other way round, but the cost will show in increased exciter complexity. Furthermore, receiver selectivity cannot be exploited unless all stations in a net have similar passbands. Consequently, it is usually better to QSY to a clear channel, rather than be too insistent on adjacent channel QRM protection.

For those who have trouble neutralising, Fig. 8 shows a simple and usually effective method. If NC is about 5 pF, and the tube is a 6146 or similar, NCs will come out about 0.001 μ F. If NCs are made too big, NC will have to be made larger. Perfect neutralisation is not generally needed and it is convenient to make NC fixed (i.e. a gimmick) and use the nearest convenient value

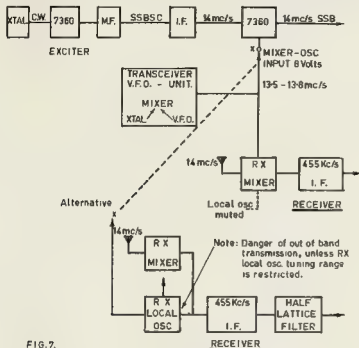


FIG. 7

Now a few words about the remainder of the exciter.

Not much signal comes out of a mixer and it has subsequently to be amplified sufficiently to shake the grid of a linear. Also, for coverage of the band, it is desirable to provide sufficient gain to be able to stagger tune all stages and still have enough gain left to use a.l.c. Now lots of gain provokes instability, for which the cures are shielding, bypassing, decoupling, neutralising and swamping. Choice of a suitable mechanical layout which avoids mutual coupling is important. You will find that the transmitters which sound the cleanest are those with the least regeneration. Distortion products increase sharply with regeneration, which is often the cause of signals which, although very good, are not crisp and "clean".

It is also as well to remember that the exciter must necessarily be operated in a strong r.f. field from its associated linear amplifier. If this field can penetrate the signal frequency or near signal frequency circuits of the exciter, you are going to have a case of r.f. feedback to cure, which might prove stubborn. Again, prevention is better than cure.

There is nothing unusual about driver stages. I find a 12BY7 and a 6L84 combine nicely to drive a 1825 with gain to spare.

available for the NCs by-pass, which stabilises the stage.

Finally, to lay a ghost.

Some s.s.b. dogma falls in the "desirable but not essential" class. Amongst these are bias supply regulation, h.t. filter capacity and h.t. supply regulation.

While you may have greater peace of mind with a stiff bias supply and hundreds of lethal microfarads on the linear high voltage supply, the simple power supplies used for many years by VK3UO/VK2AQU for c.w. and a.m., have worked admirably on s.s.b. without alteration. The designs follow old A.R.R.L. Handbook criteria, and in some cases now have even less L and C than recommended years ago for c.w.

The point is that nothing in electronics is sacred, and that a bit of

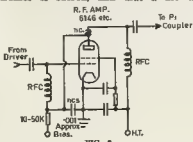


FIG. 8

Grid Dip Oscillator for 430 Mc.

Whilst building equipment for 430 Mc. a need was found for a g.d.o. to cover this frequency. To this end the following fixed coil unit was built (Fig. 1).

The heart of the unit is a butterfly tuned circuit which covers the range 340 to 500 Mc. It consists of a butterfly condenser, 30 + 30 pF., together with L, which is made of two pieces of copper strip each $2\frac{1}{2}$ x $\frac{1}{8}$ " bent into a "U" and soldered one to each side of the butterfly condenser.

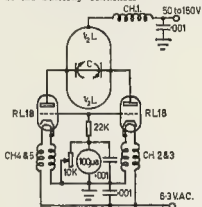


Fig.1. G.D.O. for 430mc/s.

The whole is laid out and constructed so that the leads are very short and the valves are soldered directly into circuit.

On test a parasitic indication occurred at 440 Mc. which was traced to CH4. Re-positioning and stretching out this choke removed the parasitic.

The by-pass condensers are 0.001 μ F. feed throughs. Choke 1 to 5 each consist of 28 s.w.g. close wound 1" long, $\frac{1}{4}$ " diameter.

The circuit was found to oscillate quite readily over the range with h.t. voltage as low as 50 volts.

The butterfly circuits and valves are enclosed in a shielded box with one half of L protruding through the open end.

To calibrate, it is necessary to have access to a signal source or receiver covering the frequency range involved.

—C. B. Edmonds, VK3AEE.

honest experimenting and a give-it-a-go attitude sometimes can bring rewards at small cost. The troubles start when too many corners are cut, simultaneously, or too drastically. However, any a.m. or c.w. station can be made to radiate good s.s.b. easily, by replacing the v.f.o. with a s.s.b. exciter, and juggling the buffer and final bias.

Why not have a go? And write up your experiences for "A.R."! Every word published on s.s.b. will have the long term effect of helping someone less competent, or less dedicated, to make up his mind whether or not to try s.s.b.

As it is not difficult or expensive, every station which converts from a.m. to s.s.b. is making room for one more station on the band.

It might be your pal, your son, or even the XYL—so, move over, mate! ●

Crystal Locking "Lafayette" HE30 Receiver

W. J. BELL,* VK3WK

The following details provide for crystal locking the "Lafayette" HE30 Communications Receiver on a spot frequency, such as for W.I.C.E.N., or for monitoring of rural fire net frequencies, for which it was produced.

It includes an OB2 regulator tube which will supply regulated h.t. to both the new crystal oscillator and the variable oscillator, depending on which is in use.

Use noise limiter switch position for the "crystal-variable" switch. Either wire a.n.l. permanently into circuit or leave disconnected.

Replace a.n.l. switch with a d.p.d.t. toggle switch.

Fit a two-lug terminal strip under i.f.t. mounting bolt behind dial flywheel.

Disconnect 1K resistor (running from pins 5, 6, 7 of 6BE6 oscillator tube to three-lug terminal strip) from the terminal strip and re-connect to an insulated lug on new two-lug terminal strip.

Replace three-lug tag strip near switch with a four-lug tap strip.

Build the 6C4 crystal oscillator on a 2" x 2" x 1" chassis as illustrated and mount behind Q multiplier chassis, making use of the two Q multiplier mounting screws. Drill 1/4" hole beneath new chassis and fit 1/4" grommet.

Wire switch as illustrated (Fig. 4) and connect heater lead from crystal oscillator to pin 3 of 6BA6 r.f. tube V1. Connect lead from 47 pF coupling capacitor from crystal oscillator to pin 1 of 6BE6 mixer V2.

* Staywood Park, Wangoom, via Warrnambool, Vic.

Connect the two B+ leads to crystal oscillator chassis as per Figs. 2 and 4.

To use: Crystal must be 455 Kc. higher than desired listening frequency. Switch set to correct band. Switch on crystal oscillator. (This will automatically disable variable oscillator.) Tune band-set for maximum noise (or for highest S meter reading if a signal is available). Antenna peaking and all other controls will function normally. ●

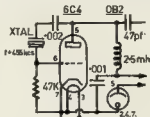


Fig. 1.

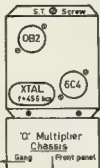


Fig. 3.

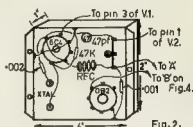


Fig. 2.

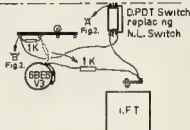


Fig. 4.

TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R." in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

Manuscripts should preferably be typewritten but if handwritten please double space the writing. Drawings will be done by "A.R." staff.

Photographs will be returned if the sender's name and address is shown on the back of each photograph submitted.

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LOOKING AT PHONE SIGNALS*

THE RECEIVER AS AN ANALYSER

GEORGE GRAMMER, W1DF

• The best way to find out something about a phone signal is not to listen to it. Not listen to it, that is, as a phone transmission. Treat it as a collection of c.w. signals and you begin to hear some things that aren't always evident in "normal" reception.

ANY receiver that will bring in c.w. signals satisfactorily can be used for checking phone signals. Although the check is purely qualitative, more than that isn't to be expected from a receiver. Quantitative measurements, whether on incoming signals or your own, take a great deal of auxiliary apparatus. However, a qualitative check will go a long way toward the goal of keeping signals clean.

Furthermore, you don't have to know much about your receiver's technical characteristics in order to make a fair assessment of the quality of a phone signal. It's largely a matter of knowing how to set the controls and knowing what to look for. The "how" is easy; the "what" takes some practice—critical observation and comparison of the various kinds of signals you run across on the air. While there isn't anything complicated about it, the technique differs from that used in ordinary reception.

First, about the receiver's controls. **Turn off the a.g.c.** This is vital. Any variation in receiver gain while you are examining a signal makes it practically impossible to interpret what you hear. Set the audio gain well up and turn the r.f. gain down to the point where the average signal is of moderate strength. Turn on the b.f.o.

BEWARE OF OVERLOADING

Before doing any phone checking you have to find out something about the receiver's ability to handle signals. An easy way is to tune across a c.w. band. When you come to a strong signal, vary the r.f. gain control. If the audio output keeps coming up as you increase the gain, the control is operating in the right region. If the output starts to level off at some point on the gain control, the receiver is beginning to overload. There is a change in the character of the beat note at that point; the tone begins to sound a bit thin or mushy. Also, signals and noise in the background will "bounce" in intensity with the keying of the signal. These effects will readily be recognised after you have heard them a few times.

Pick out the strongest signal and set the r.f. gain well below the point where overloading starts. You should still be able to get all the output you need by increasing the audio gain.

Unless the controls are set in this way the receiver can't handle the

stronger incoming signals without overloading. Overloading has to be avoided at all costs if your observations are to be useful.

ADJUSTING THE B.F.O.

Next, set the receiver's selectivity to maximum and turn off the b.f.o.¹ Tune in a c.w. signal by adjusting the tuning control so the response to the background noise is maximum when the sender's key is down. An unmodulated steady carrier can also be used, if such a signal happens to be available.

When the gain controls are adjusted as described, the background noise increases when a signal is present, just as it does when the b.f.o. is turned on. This is opposite to what happens when the a.g.c. is used and the manual r.f. gain is at maximum; in that case the background noise decreases when a signal is tuned in.

Finally, turn on the b.f.o. and adjust it to give a beat tone of about 500 cycles on the signal so tuned in. Either side of zero beat can be used.

CHECKING A PHONE SIGNAL

At this point you're ready to take a look at a phone signal. The a.m. broadcast band is a good place to start, if your receiver happens to be one that covers it. Broadcast modulation is likely to be held under proper control, and your object is to find out what the sidebands of a properly modulated signal are like.

First, tune in a carrier, adjusting the tuning for the selected beat tone. For the moment, ignore the modulation, which will sound like a miscellaneous collection of beat tones. Concentrate on the carrier beat. Two characteristics will stand out: (1) the pitch of the tone is constant; that is, the frequency of the carrier is not in the least affected by the presence or absence of modulation, and (2) the carrier amplitude also is constant. There will be no changes in carrier amplitude that occur simultaneously with modulation. If you are tuned to a distant station and there is fading, the fading will cause variations in carrier strength, but careful listening will show that these variations are quite independent of the actual modulation.

Now tune off about a kilocycle to the side which makes the carrier beat tone rise in frequency. You'll now be in one of the two sidebands, and if the receiver selectivity is high the carrier beat either will be much weaker or will have practically disappeared. Listen carefully to the beat tones that rise

and fall with the modulation. Unless the station is in the middle of a commercial (when the rules are sometimes conveniently overlooked) the sideband beat tones will have a clean, smooth sound—a little hard to describe accurately but easily recognisable after a short listening session. Continuous moving the tuning away from the carrier frequency and there will be no change in the character of these beats, except that as the tuning is moved farther from the carrier their intensity usually will decrease. These smooth-sounding beats are "legitimate" sidebands.

BANDWIDTH

If the receiver tuning dial is calibrated closely enough it is possible to get a fairly accurate idea of the transmitted bandwidth by this beat method. Concentrate on those beats which have the same tone for which you set the b.f.o. at the start. Find the frequency setting, farthest from the carrier, at which you set that tone from a sideband component. Then the difference between that dial reading and the dial reading for the carrier is equal to half the signal bandwidth—half, rather than total, because you've looked at only one of the two sidebands.

Estimating bandwidth by this method requires the ability to concentrate on the right beat tone. Obviously, it is easier to recognise the beats when the receiver has high selectivity, because then the strongest beats will always be around the right tone regardless of the tuning-dial setting.

One other thing will have been noticeable about the properly modulated signal you've been examining: the sideband components are always relatively weak-sounding compared with the carrier. This has to be so, because with voice or programme modulation the average power in one sideband is only about one-eighth the carrier power. Furthermore, this power is divided up among the various component frequencies of the sideband, so any single component will have even less power. Occasionally, if you happen to be listening to music, a single tone will stand out, but even in this case its amplitude usually will be 6 db. or more below the carrier amplitude.

ANALYSING THE PROCESS

If you aren't wholly familiar with receiver operation a diagram of this process may help. Fig. 1 is typical of the frequency-vs.-amplitude distribution that might exist in a good a.m. phone signal at some instant. Each sideband consists of a series of frequency components associated with a voice sound. These components usually have harmonic relationship, to a close degree, for any given sound; in Fig. 1 all the side frequencies shown are produced by audio tones that have harmonics of 200 cycles. More important, however, is the fact that each sideband

¹ It may not always be easy to do this, since the b.f.o. and a.g.c. cannot be controlled independently some receivers, although it is usually practical to pull out the b.f.o. (temporarily). Also, receivers with product detectors do not lend themselves to this method of setting the b.f.o. frequency since the detector does not (or should not) function when the b.f.o. is not operating. In such cases the b.f.o. has to be set to give approximately the desired tone on background noise. This is good enough if the selectivity is high.



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consists of a group of **distinct** frequencies. It is not just a continuous mess. Each separate frequency gives a separate, and reasonably stable, beat tone with the receiver's b.f.o.

If the receiver can handle a group of these frequencies without doing injustice to any of them—i.e. without overloading—the individual beat components will stand out just as any one of a similar group of closely spaced c.w. signals will retain its individuality. Sideband components of this sort are

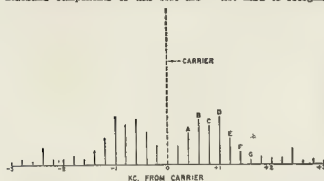


Fig. 1.—A properly modulated a.m. signal may have, instantaneously, side frequencies, distributed something like the pattern in this drawing. The frequency pattern from instant to instant with voice modulation.

generated in a properly modulated transmitter, and sound "clean" with the receiver's b.f.o. on.

By using as much selectivity as the receiver offers, the number of sideband components heard at any one time is narrowed down. In Fig. 2 a curve typical of "500 cycle" selectivity is shown superimposed on the lettered group of sideband components from Fig. 1. The response range shown is 80 db. If the receiver is tuned to the frequency of side component D, the response to that component will be as shown by the vertical line. This response is relative to the carrier-only response; the scale here differs from that of Fig. 1 because the former was plotted to an intensity (voltage or current) scale while Fig. 2 is in decibels. The sideband components labelled B, C, E and F would have the decibel response shown, as a result of the effect of the selectivity on their original amplitudes. Note that A and G are so far down (more than -80 db.) that they do not even show on the graph. This is also true of all components higher in frequency than G and lower in frequency than A, including the carrier.

If the receiver's b.f.o. is offset from the selectivity curve by 500 cycles as shown (this was the object of the method of setting the b.f.o. frequency detailed earlier) each sideband component will give a beat tone as shown in the upper scale. The selectivity restricts these tones to a relatively narrow range centering around 500 cycles. This also will be true when the receiver is tuned to other parts of the signal. When this point is appreciated the beat tone method of checking bandwidth becomes clear.

Practically speaking, any sharply peaked selectivity curve—such as the kind a Q multiplier or the old-type crystal fixed gives—is best for this type of checking. While your mind can be trained to exclude those tones which differ appreciably from the one for which you originally set the b.f.o., it

is easier with a highly peaked selectivity curve because then only a frequency component right on the peak—that is, one that gives the selected beat tone—really stands out.

SPLATTER

Splatter frequencies arising from overmodulation tend to have a different character than legitimate sidebands. There is a harshness associated with them that again is hard to describe but not hard to recognise. Listen for this

sort of thing during commercials, particularly, and with the tuning set toward the edge of the band you found to be occupied during normal program transmissions.

The harshness associated with splatter is the result of a different type of sideband-frequency distribution. The onset of splatter is usually abrupt, giving an effect something like key clicks. Also, the side frequencies it generates are often much more closely spaced than the sideband components of proper voice modulation, so that distinct tones are less easily recognisable.

CHECKING AMATEUR SIGNALS

An hour or so spent in listening this way will give a much better idea of what a phone transmitter is really doing than months of listening to what actually is being said. Furthermore, what is learned is as useful in appraising an s.b. signal as it is for judging a.m.

Really horrible examples of overmodulation may have been missing in this preliminary training of listening to a well-modulated broadcast station. They are much less rare in the communication services—including sad to say, Amateur. However, it is well to start off by learning what a good signal is like. If yours is a Ham-bands-only receiver, you will have to identify the right kind through pre-knowledge of how it should sound. The difference between good and bad is clear enough, after you've heard both kinds.

With this background in checking modulation you're in a position to take a look at Amateur signals and find out a few things about them. However, before condemning any signal you hear as not being up to par, ask yourself two questions: First, is there any possibility that the receiver is being over-loaded, either by the signal in question or by one that may be far enough removed in frequency so that you aren't aware of its presence? That r.f. gain control setting is important. Second,

if there are harsh "burps" indicating splatter from overmodulation or s.b. flattening, do they belong to the signal you're blaming? In a crowded band identification of bits and pieces of splatter is sometimes pretty difficult.

In other words, make sure that the signal being checked is the one you're actually hearing, and that no spurious receiver effects are being introduced. An overloaded receiver is worthless as a checking device. Most receivers have so much gain that even a weak signal can be amplified up to the overload point unless care is used in holding down the amplification. The lower you can run your r.f.-i.f. gain, the better.

A.M. PHONE

With these precautions well in mind, you'll have no difficulty in spotting overmodulation on a.m. signals. "Overmodulation" here means any nonlinearity that results in splatter outside the proper channel. Very often it isn't overmodulation in the commonly accepted sense of the word, but is "spurious" generated by attempting to make a modulator do more than it is capable of doing. The actual modulation percentage may be well below 100. The effect is much the same in either case.

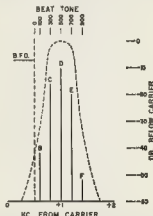


Fig. 2.—With high selectivity, only those sideband frequency components to which the receiver is actually tuned will give appreciable response. This drawing shows the relative response a selective receiver would give to the lettered components in Fig. 1. The scale at the top shows the beat tone each component would produce when the b.f.o. is offset 500 cycles from the peak of the selectivity curve. In this case only C, D and E would result in appreciable audio output.

You can find out still more by this method. Tune in the carrier and listen to the beat carefully while the transmitter is being modulated. A good many v.f.o.'s can't "take it" when a succeeding stage is modulated. A change in the carrier beat frequency during modulation shows this up; it is most easily detected if the beat tone is made as low as possible. The change is often at a syllabic rate, giving an effect something like frequency-shift keying; the principal cause of this is a change in power supply voltage when the modulation throws on an extra load.

If the v.f.o. frequency is modulated at an audio rate, the carrier will take on a mushy character during modulation. Audio i.m. leads to some undesir-

able effects; the combination of f.m. and a.m. causes distortion, increases bandwidth, and makes the sidebands unsymmetrical. If you run across such a signal, change to normal phone bandwidth, and with the gain controls still the same and the b.f.o. still on, try to tune the receiver to zero beat with the carrier. If there is appreciable audio f.m. it won't be possible to make the voice sound right. The same test on a stable signal will give no special difficulty, although it may not be possible to hold the exact zero-beat adjustment for any length of time because of minute frequency drifts in the transmitter's or receiver's oscillators.

The beat-note checking method also will show up changes in the carrier amplitude. As there are many controlled-carrier a.m. phone signals, an increase in carrier amplitude while modulating is often to be expected. However, if the carrier amplitude decreases, something is wrong with that signal. It may be poor power supply regulation, but is just as likely to be something that results in the generation of spurious modulation components. A check of the sidebands will show which.

S.S.B.

Examined in this way, s.b. signals differ from a.m. only in the absence of the carrier and one sideband. Properly generated and amplified, the sideband components will have the same clean sound to them that properly modulated a.m. sidebands do. Overdriving a linear amplifier will result in "burps", especially noticeable outside the desired sideband channel and particularly in the

undesired sideband region, just as a.m. overmodulation does.

Since there is supposed to be no carrier with s.s.b., the receiver's b.f.o. must be set up on a c.w. signal or unmodulated carrier as described earlier. This is obviously not the same setting that would be optimum for s.s.b. reception; the b.f.o. frequency is offset by 500 cycles or so from the s.s.b. setting. With this offset, you can easily determine whether any carrier is being transmitted; a continuous carrier will give a steady tone, usually weak compared with the sideband, but nevertheless present. You can also detect a carrier that rises with modulation. It is "keyed" along with the voice, sounding something like slow c.w. with a very soft make and break. This is caused by incomplete carrier balance, which may be a dynamic effect—that is, the carrier may be quite well balanced out when there is no modulation, but becomes unbalanced when it is being driven by audio.

With high selectivity it is possible to check the bandwidth of an s.s.b. signal by the beat method, and particularly to see whether there is appreciable output in the undesired sideband region. As shown by Fig. 2, the beat tone that your b.f.o. is adjusted for will predominate only when a sideband component is on the frequency to which the receiver is set. If your mind is trained to exclude any other tones you may hear, you may be sure that you aren't being deceived by instrument errors. The selectivity has to be high enough so that the audio image of the

b.f.o. tone is negligible; in other words, you have to have true single-signal c.w. reception.

TRANSMITTER CHECKING

Of course, all this is only preliminary to the real object—checking your own transmitter. Practice on incoming signals of all types will give you the insight needed for analysing your own signal. Having found out how to spot defects in others, you're well prepared to find out what, if anything, is wrong with your own.

Some suggested setups for checking your own transmitter will be discussed in a subsequent article. In the meantime, give a try at being your own sideband analyst. The only equipment you need is a receiver.



MODIFICATION OF THE 522 FOR F.M. OPERATION

(Continued from Page 8)

Limiter saturates not recorded
Limiting constant over ... 10 μ V. approx.
Muting opens at 5 μ V.
Noise quiescent 18 db. at 5 μ V.
A.M. rejection at 5 μ V. ... 6 db. approx.
A.M. rejection at 10 μ V. ... Improved

It will be noted that some of the tests were done on one receiver and not on the other. This was due to the two sets being tested at different times and not having the previous test sheet at the time of the second test, consequently some were missed and unfortunately have not been retested to date.

FINAL COMMENTS

Three channels were mentioned in connection with the receiver crystals. These have also been published in "A.R." (July 1963, p. 7) and I would like to endorse the acceptance of these channels as standard throughout Australia, mainly because "F.M. Mobile's" are going to be much more common when there is more of this equipment released from commercial service during the next few years.

These chaps are going to be moving intrastate and interstate, and what could be more enjoyable or useful in an emergency, than to have the privilege of "break in" wherever you may be on these frequencies. Likewise, what could be more frustrating than to know that there is a net operating and not be able to "break in" for the sake of acceptance at this early stage of standard Australia-wide frequencies.

This article could not be published but for the assistance given by members of the VK3 f.m. gang and I would like to acknowledge the help given by John Spicer, VK3ZEL, who has spent much time checking and advising from time to time with air tests, some he doesn't know of since they were done on the receiver while he was operating, and also to Jim Stewart, VK3ZFS, Jack Leitch, and George Crisp, VK3ZJQ, for their interest and practical help during the period of modifying the perennial "Surplus 522" gear.

So here's hoping that you will put that 522 to good use, and get a lot of pleasure from operating on the "Friendly F.M. Net".

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SINGLE SIDEBAND ON 432 Mc.

C. B. EDMONDS,* VK3AE

SOME thought was given to the problem of obtaining single sideband on 432 Mc. It would seem that practical equipment falls into one of two broad categories:

- (a) Low level mixing,
- (b) High level mixing

Low level mixing has much to recommend it, but leaves a problem of power amplification at the operating frequency. This may require three or even four stages of linear amplification.

Power mixing demands extra precautions and designing to prevent the radiation of undesired by-products of mixing as these would be at a much higher level.

With an existing 14 Mc. s.s.b. exciter on hand, it was therefore decided to use power mixing and the following article describes equipment for heterodyning the output of this exciter to 432 Mc.

The stages involved are shown in block form in Fig. 1. The first heterodyne section consists of an overtone oscillator on 42.5 Mc. driving a 6CL6 amplifier which is pi coupled to cathode of the 832 balanced mixer.

The value of the 832 grid swamping resistors was chosen to suit the drive available at 14 Mc., which was fed to the grids in push-pull.

No balancing controls were found necessary with the particular valve used and any 42.5 Mc. components which may be present at the output is too low to be measured.

The oscillator is in a shielded compartment, the wall of which fits snugly across the 6CL6 valve socket. The earthed pins of this socket are soldered directly to the shield. Under these conditions the 6CL6 is perfectly stable, no doubt this is helped by the low impedance across the grid.

transfers power via L8 in the centre of L9 to the grids of V6 (a push-pull tripler), the anode circuit of which is resonated by L10 and stray capacities to 125 Mc.

125 Mc. is capacitively coupled to the grids of V7, a QEQ08/20 push-pull tripler. The anode circuit of V7 is a quarter wave resonant line on 375.3 Mc. which is tuned by means of a sliding shorting bar.

375.3 Mc. is then fed in parallel to both grids of V8 (QEQ08/40) balanced mixer by L12. L12 consists of a loop coupled to L11 and a length of open wire transmission line. This length of transmission line is chosen so that L12 is in quarter wave resonance. This further attenuates any undesired frequencies which may be present at that point.

Several methods of coupling this frequency to the QEQ08/40 were tried, but best results were obtained by the method set out in this article and accompanying drawings.

Feeding the signal to the cathode of the 06/40 resulted in overall instability and it was found essential that the 06/40 cathode be directly earthed. 56 Mc. is fed to the grids of the 06/40 in push-pull and the value of the swamping resistor was chosen to suit the drive available. Optimum output was found to occur when the grids were driven so as to just reach grid current, i.e. 0.1 mA. Any drive in excess of 0.1 mA. caused a decrease in output.

The anode circuit tuned to 432 Mc. consists of a quarter wave line tuned by a preset shorting bar. It was hoped to use a butterfly circuit in this position, but the internal length of the valve anode leads proved to be too long and multiple resonance occurred. The output is taken via L16, a balanced output link (Balun) was tried at this position but no perceptible difference was noted. With 40 watts d.c. input, this mixer gives 4 watts output on 432 Mc.

The only spurious signal which could be detected in the output was a small amount of 375 Mc. Much effort was made to eliminate this component, without success, it was found to be due to direct feed through the inter-electrode and in-built neutralising capacitors. In

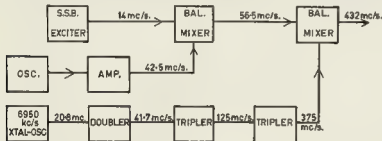


Fig. 1- BLOCK DIAGRAM.

Balanced mixers are used as this circuit will cancel the most troublesome source of spurious signals, i.e. the heterodyning frequency.

Mixing 14 Mc. to 432 Mc. in one stage would give heterodyning frequency only 14 Mc. removed from 432 Mc. and an image only 28 Mc. away. For this reason heterodyning is achieved in two steps.

After much thought it was decided to use 56 Mc. as the first step of heterodyning. Some country stations may have to use a different frequency, depending on the local i.v. situation.

* 13 Anselm St., Glenroy, Vic.

No spurious signals or instability is apparent due to the harmonic relationship between the input, output and heterodyning frequency. (This might not be the situation if the 832 were driven into grid current.)

The second unit heterodynes 56 Mc. to 432 Mc. and is built on a copper chassis. The first stage is a 5780 squarer overtone oscillator and cathode follower, with output at 20.85 Mc. This is capacitively coupled to the grid of a 6CL6 doubler, the anode of which is resonated to 42 Mc. by L6 and the stray capacities. L7 is a two-turn link closely coupled to the cold end of L6. This

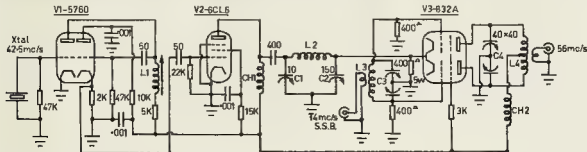
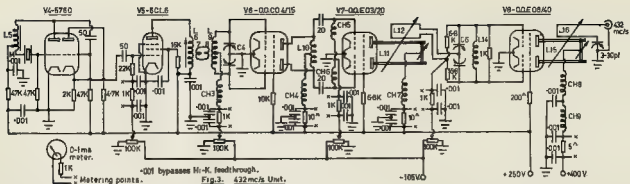


Fig. 2. 56mc/s. UNIT.



in this respect a tube without in-built neutralisation may prove more satisfactory.

In this case the 375 Mc. component is attenuated by tuned circuits in a subsequent 432 Mc. linear amplifier.

With the metering constants shown, grid currents are 2 mA. for i.s.d. Plate currents 100 mA. for i.s.d. except in the case of V8 which is 200 mA. i.s.d.

The layout is not critical providing normal v.h.f./u.h.f. precautions are observed. All circuits are built on an open chassis with the exception of V8 which is in its own shielded component, above the chassis. The valve being mounted horizontally through the shield partition adjacent to V7, so that L12 can reach from the anode circuit of V7 to the appropriate points in the grid circuit of V8.

The transmission line portion of L12 can be bent to suit a particular layout, but sharp bends should be avoided. L12 was resonated, after being bent to the required shape, by using a g.d.o. and trimming the length for resonance. All fixed bias voltages were made adjustable so as to give adequate control of drive.

No decoupling is used in the heater circuits as a multiple secondary transformer was used. Should it be desired to use a common heater winding, decoupling may be necessary. Alignment proved to be quite easy, all circuits were set to frequency with the aid of a g.d.o. When power was applied very little final trimming was found necessary. L10 is resonated by varying the spacing between turns.

All tests and adjustments were made using a dummy load.

A photograph of this unit appears on the front cover of this issue.

COIL DATA

- L1—3/8" diam., 12 turns. Ex BC733 former with iron dust core.
- L2—1" d., 8 t. 16 s.w.g., 14" long. Spacing adjusted for optimum output.
- L3—1" d., 20 t. 16 s.w.g., c.w., 5-turn link close coupled to centre.
- L4—5/8" d., 8 t. 16 s.w.g. Air spaced self supporting, 2-turn link loosely coupled.
- L5—3/8" d., 28 t. tapped at 4. Ex BC733 former with iron dust core.
- L6—3/8" d., 12 t. 28 s.w.g., c.w. Ex BC733 with iron dust core.
- L7—2 t. closed coupled to cold end of L8.

- L8—3/4" d. 2 t., close coupled to centre of L9.
- L9—3/4" d., 10 t. 16 s.w.g., air spaced, self supporting.
- L10—3/4" d., 4 t. 16 s.w.g., self supporting, spaced for resonance.
- L11—Two lengths of 1/8" d. tube, 3 1/2" long, shorted at approx. 3", spaced 5/8" centres. Plus 3/4" for anode connectors.
- L12—See Fig. 4. Spaced approx. 1/8" from L11.
- L13—1/2" d., 2 t., close coupled to centre of L14.
- L14—1/2" d., 8 t. 16 s.w.g., air spaced, self supporting.
- L15—Two lengths of 1/4" d. rod, 3-1/4" long, shorted at approx. 2-5/8", spaced 5/8" centres.
- L16—14 s.w.g. hairpin loop, 5/8" by 2-3/4" long, spaced approx. 1/8" from L15.
- CH1—28 s.w.g. close wound, 1 1/2" long, 3/4" diam.
- CH2—28 s.w.g., c.w., 1 1/2" l., 3/4" d.
- CH3—28 s.w.g., c.w., 1 1/2" l., 3/4" d.
- CH4—28 s.w.g., c.w., 1 1/2" l., 3/4" d.
- CH5—Red Devil.
- CH6—Red Devil.

- CH7—28 s.w.g., c.w., 1 1/2" l., 3/4" d.
- CH8—12 turns 16 s.w.g., 1" l., 1/2" d.
- CH9—12 turns 16 s.w.g., 1" l., 1/2" d.

OPERATING CONDITIONS

Valve	I _g	I _p	Fixed Bias
V2	0.8 mA.	25 mA.	0
V5	0.8 mA.	25 mA.	0 to -10v.
V6	2.0 mA.	40 mA.	-105v.
V7	1.8 mA.	40 mA.	-105v.
V3—Ig nil.			
Ip 70 mA.			
42.5 Mc. component on cathode, 11v. r.m.s.			
D.c. cathode bias 32v.			
14 Mc. component on grids, 5v. r.m.s. to each grid.			
V8—Ig 0.1 mA. max. on speech peaks only.			
Ip 40 mA. with 375 Mc. drive removed.			
Ip 50 mA. with 375 Mc. drive only.			
Ip 100 mA. with 375 Mc. drive and 56 Mc. speech peaks. Fixed bias approx. -30v.			
432 Mc. power output 4 watts with steady tone drive and 0.1 mA. grid current.			



Fig. 4. - L12.

N.F.D. CONTEST—Suggested Amendment to Duration

The following letter has been sent to F.C.C. re an alteration to the duration of the N.F.D. Contest:—

Dear Sir,

At the last meeting of the Victorian Division, the following motion was passed:—

"That this Division approach the Federal Contest Committee with the proposal that National Field Contest be made continuous from Saturday 1600 hours until Sunday 1600 hours."

It was also resolved to send copies of this letter to all Divisions and publish it in "A.R." in order to enlist support and stimulate discussion with a view to possible implementation for 1964

Some reasons for this proposal are:

1. With increased club participation, the time, trouble and work involved is hardly justified by the present "broken" effort
2. 4 p.m. to 4 p.m. allows time to set up and to pack up at a reasonable hour on Sunday.
3. 24-hour operation gives a cross-section of band conditions.
4. Club participation allows "shift" operation for the benefit of those who want to sleep.
5. Night time operation would allow more portable to portable contacts when bands are quieter and less crowded.
- We would welcome your comments on the proposal, and your support, and would ask that you give the matter urgent consideration.

—J. Batrick, Pres, VK3 Div, W.I.A.

NATIONAL FIELD DAY CONTEST RESULTS, 1963

As indicated by the number of logs submitted this year, popularity of this Contest does not appear to have increased over that of last year. However, the rate of scoring shows a remarkable increase over that of last year and some really excellent individual scoring was achieved, notably that of VK6WC and VK7JF.

High scoring was no exception to the multiple-operator portable stations as they, too, submitted very high scoring logs. Noteworthy of these were VK-3APC, VK5LZ and VK6VF who all scored over 2,000 points.

The standard of the logs submitted was of a fairly high order, but in particular the log of VK3APC deserves recommendation as regards its neatness.

Judging from the descriptions of equipment included on logs, there exists some really fine portable equipment, and to describe it all would require more space than can be allotted here.

As a final remark, mention is made of VK3CS/P's operating point. In their own words, "The locale is inhospitable in the extreme. A bare rock and gravel volcanic outcrop, some 300 feet above the surrounding plain, dotted with a few tufts of hardy scrub grass and dominated by a blackened tree, dead for decades. The road up to the summit is a boulder-strewn path cut up the side of the hill for who knows what purpose. Towards the top, the track is hard to see and it is easy to drive into a position which can only be backed out of. The ground will not successfully take pegs, and to ensure trouble-free operating in high winds, loxins are let into the rocks for guy anchors, and left permanently."

That could almost be described as N.F.D. the hard way.

In conclusion, we would like to thank all who participated and submitted logs, and at the same time congratulate the award winners.

—Federal Contest Committee, W.I.A.

AWARD WINNERS

Section A (Portable Phone):

VK2AAH—H. F. Burloff	749 pts.
VK3WK—W. J. Bell	806 "
VK4OL—A. J. Hansen	448 "
VK5WC—F/O. E. Sandstrup	1124 "
VK6MM—M. J. McDonald	148 "
VK7JF—J. E. Forster	1109 "

Section B (Portable C.W.):

VK2YB—W. J. Lewis	204 pts.
VK3AFQ—H. L. Hepburn	77 "
VK4OL—A. J. Hansen	124 "
VK6MM—M. J. McDonald	35 "
VK7CH—C. Harrison	269 "

Section C (Portable, Multi-Op.):

VK2APQ—P. J. Healy	1308 pts.
VK3APC—Moorabbin & District Radio Club	2603 "
VK5LZ—Elizabeth Amateur Radio Club	2398 "
VK6VF—V.h.f. Group of W. Australia	2189 "

Section D (Fixed Stations):

VK2APK—D. Kiesewetter	770 pts.
VK3ASZ—S.W. Zone, W.I.A., Victoria	765 "
VK4UK—C. P. Singleton	260 "
VK5RR—R. G. Harris	275 "
VK5WU—R. G. Jaeschke	120 "
VK7SM—S. G. Moore	670 "

Section E (Receiving):

WIA-L2023—D. W. Shephard	585 pts.
WIA-L3042—E. W. Trebilcock	835 "
WIA-L2233/VK4—R. L. Edwin	275 "
WIA-L5041—D. J. Coggins	765 "
WIA-L6021—P. W. Drew	640 "
WIA-L7025—B. Kelly	550 "

Section C (Portable, Multi-Op.):

VK2APQ	1308	VK3CS	1136
VK3APC	2603	VK5LZ	2398
3RN	1923	VK6VF	2189
3WI	1159	6AS	203

Section D (Fixed Stations):

VK2APK	770	3ALD	50
2ZO	110	3KS	25
2EY	65	VK4UK	260
VK3ASZ	765	VK5RR	275
3AIT	550	5LL	220
3EF	515	5TM	115
3XB	470	5CL	70
3AZM	345	5TN	85
3LW	320	6PE	80
3AHQ	265	5WI	80
3AHA	235	VK6WU	120
3QV	180	VK7SM	670
3PP	110	VK8UX	15

Check Logs—

VK1SG	VK5TL
VK4GH	VK7CH

Section E (Receiving):

WIA-L2023—D. W. Shephard	585 pts.
WIA-L3042—E. W. Trebilcock	835 "
WIA-L3099—J. Jobson	790 "
WIA-L3064—R. F. Loutit	490 "
WIA-L3127—R. G. Gething	405 "
SWL-VK3—P. J. Gibson	375 "
WIA-L3128—B. Theodore	335 "
SWL-VK3—D. C. Diamond	315 "
WIA-L2233/VK4—R. Erwin	275 "
WIA-L4028—T. A. Lane	240 "
SWL-VK4—C. Paton	85 "
WIA-L5041—D. J. Coggins	765 "
WIA-L5015—W. J. Clayton	565 "
SWL-VK5—D. B. Murdoch	270 "
WIA-L6021—P. W. Drew	640 "
WIA-L6005—D. S. Pratt	570 "
WIA-L7025—B. Kelly	550 "

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NOW THEY'RE ALL FOR RADIO*

JAMBOREE-ON-THE-AIR STARTED IT!

By L. D. MARMO,† G.S.M. 8th Footscray

It all began in 1960. I was shopping in Footscray the week after the Group had taken part in the Jamboree-on-the-Air, for the first time, when a diminutive Cub stopped me, and said enthusiastically, "On boy, Skip, we had beaut. fun last Saturday! Wouldn't it be great if we could have the Jamboree-on-the-Air all the time?"

Why not, I reflected. And so the idea of the 8th Footscray Boy Scouts' Amateur Radio Club was born... suggested by a small boy.

We then gathered information, and started to correspond with the Ashgrove, Queensland, Boy Scout Group, who had begun the first Scout Radio Club in Australia in 1961.

It was not until September 1962 that we considered that we had sufficient data to make an approach to the proper authorities. However, the difficulty of obtaining skilled technical assistance, and the provision of suitable equipment, caused us to delay until early 1963.

★
Opening of 8th Footscray Boy Scouts' Amateur Radio Club at Maidstone on June 4, 1963. L. to R.: John Marmo, Gavin Hare, Dennis Price, Maxwell Manning and Les Marmo (seated).



★
In the meantime, the Wireless Institute of Australia had proposed a scheme to develop in youth an interest in Radio and Electronics. To provide incentives, and to give recognition to members, they proposed to introduce a system of Radio Proficiency Certificates on a graded basis.

This was the answer to many of our problems. Here we had offered to us a ready-made interesting programme of activity, which recognised skill and achievement. An approach was made to the Institute and we became Youth Radio Club No. 0002 on their register.

P.M.G. PERMITS

An application to the Radio Branch of the Postmaster-General's Department for a licence to transmit on the short wave was accompanied by the licence fee of £1 and a letter assuring the P.M.G. that their regulations in relation to the

operation of Amateur Stations would be rigidly observed, brought forth official permission and the issue of call sign VK3AEF for the Group.

Having been granted a licence, and admitted to membership of the Wireless Institute Youth Radio Scheme, the Club has begun regular meetings in the Scout Hall on Tuesday nights and Saturday afternoons.

A programme which includes radio construction, electrical and radio theory classes, shortwave listening, and station operation (in which the Scouts hope to make local, interstate and overseas contacts) is now operating.

ACHIEVEMENT

You may ask, what has the formation of this Club achieved?

Firstly, it is hoped that Scouts and Senior Scouts will develop an interest in Radio and Electronics which can be pursued as a vocation, or a hobby through life.

Secondly, by keeping alive the spirit of fraternity, fun and fellowship, which was so evident in the Jamboree-on-the-Air, the Group will be carrying out in a practical way, the provisions of the 4th Scout Law.

In Queensland, the Ashgrove Boy Scout Group and Oakleigh Group both have Radio Clubs and operate their own Club Stations. Ashgrove is VK4AH and Oakleigh is VK4OS. In Tasmania, VK7BS is operated by members of the 13th Hobart Group, and in N.S.W. 1st Auburn Senior Scouts have formed a club and Broken Hill Scouts will be on the air before long.

In the West, 1st Kalamunda Group has just begun.

It is easy to visualise a chain of Scout Radio Clubs throughout Australia and even throughout the world, all regularly in contact with one another, forming friendships among their numbers and broadening their outlook and understanding of the Scout Law.

Other Man's Station

FRANK BENTLEY, VK5MZ

Frank received his licence on 22nd October, 1931, and joined the celebrated "M" gang with the call sign of VK5MK, which he held until World War II, when naturally Amateur Radio ceased for the duration.

The end of the war found him not very interested in coming back on the air, but was finally talked into resuming his hobby by Reg VK3MZ, this time with the new call sign of VK5MZ, and using a Type 3 Mark II, which he used continuously until early in 1962 when he astounded the natives by coming up with a Gelson to an 807, modulated by a pair of 807s.



Frank has worked most countries available on c.w., and in 1954 started the regular telephony schedule with Reg VK3MZ and the late Jim VK2LM, which with Carl VK5SS joining in 1955, has been on 7 Mc. at 6 p.m., Adelaide time, without fail ever since.

For many years an executive in the S.A. Combined Church Callisthenics and Dancing Interstate Team, he visited Ballarat each year for the competitions, making firm friends among the local Amateurs in that city.

Still as keen as ever, Frank is typical of the non-technical enthusiast who chose Amateur Radio as his hobby in what is known, rightly or wrongly, as "The good old days" and has never regretted his choice.

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* Reprinted from "The Victorian Scout," July, 1963.
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Sub Editor: J. M. (Mac) HILLIARD, WIA-L3074

57 Gardena Street, Blackburn, Victoria

ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB EDITOR

Greetings fellow listeners. This month I would like to say a few words about what some people refer to as "Donald Duck" talk, i.e. single sideband. The whole nature of s.s.b. is one to conserve the radio frequency spectrum used by the Amateurs, so that there can be more channels of communication for a given number of kilocycles. As most of us know, there is an ever increasing demand for more channels for communication. Single sideband allows more voice QSOs per band than any other mode of transmission. The use of s.s.b. has shown that a two to one reduction of bandwidth is entirely possible as compared to amplitude modulation.

S.s.b. has a distinct advantage over a.m. as regards selective fading. An a.m. signal is subject to distortion because of fading. The s.s.b. signal has so few kilocycles that it is not subject to selective fading. Selective fading should not be confused with the normal fading that exists on any sky wave signal.

The days of a.m. are by no means over, as not everyone can afford to start up on s.s.b., but it is interesting to note that at a recent v.h.f. display in W. land, that all the stations on display were s.s.b. rigs. By the way, an s.s.b. signal has a gain of 3 db. over an a.m. station.

Well so good for my monthly chat. Now Mac at the local scene and see what you have all been doing of late.

VICTORIA

Roger L3188 and his friend motored up near Kingslake for the R.D. Contest and set up camp, but they had their share of troubles as their battery went flat on them during Saturday night, and so result they were forced off the air for many hours. However they had a good time which was the main thing. By the way, you v.h.f. boys, Roger may be able to help you with your beam troubles.

Our popular President Maurie has been as busy as ever, but has been having converter troubles, however Bob Young is looking into the matter and he is anxious to help any of our members who have been too busy to devote much time to Ham Radio.

Thirty-six people were at our Sept. meeting, which is a sure must be an all time record. In fact one had to fight a way through the crowd to get a seat. We had as our guests, members of the 8th District Footsclay Boy Scouts with Bill SAHT, who is one of the big chiefs. Our guest speaker for the evening was Eric Trebilcock, WIA-L3943, who spoke to us on a swifling note of his experiences. Eric has been active since 1928 and his discourse on the importance of sending out correct reports was very interesting for all present and I am sure that we all learned a great deal from his talk. Eric went on to say that in his opinion, it took about five years to become proficient at v.h.f.ing. He also showed us a number of QSLs and awards that he had won over the years. Many thanks Eric for a really first class evening.

Before our meeting introduced our guest speaker, several important matters came up and I will touch on them briefly. Council have requested us to erect an aerial for the ARV which belongs to the Group. In future we will be able to borrow books from the library on meeting nights. We also have permission to produce a newsletter. However there are several important issues to be gone into on that score.

Great L3188 is now active on 80 Mc with a new converter and a 2 el. quad is almost ready.

Nell Duncan is sweating very hard at the moment for the January exam. for the ticket. Best of luck for the ticket. Nell Noel L3181 has been a little more active recently and has been hearing a little DX on 14 Mc. Several months ago Barry Butler, who is a member of the VK No. 1 club, was in and he took him into one of our meetings. Very pleased that you made the meeting, Barry, but sorry that I was not able to meet you. Our L3093 hopes to have his ticket before the end of the year. Best of luck to you Craig.

NEW SOUTH WALES

Conditions have not been good in this neck of the woods so far as the Ham bands are concerned. Recent L2233 reports hearing XE2 and OA5 on 1 Mc. Ross is with the No. 1

Wireless Regiment at Cabralah in Queensland. Don L2022 writes that owing to other commitments he has been out of a.w. activities for some time. However he did manage a few hours during the R.D. Contest. Your scribe, L2211, managed some listening in the R.D. Contest. Thoughts for the month. Safety starts between the ears, keep applying it through the years. 73, Chas. L2211.

Late news: Don L2022 had the misfortune to burn out a transformer in his rx just before the VK-ZL Contest. Bad luck, Don.

WESTERN AUSTRALIA

Our stalwart from VK8 land has really had a feast with the DXK over the past month. In fact Peter says that he thinks that the past month would have been one of his best efforts yet, and looking at the most excellent log that he sent over, it would certainly seem like it. Despite rx troubles just before the R.D. Contest, Peter managed to get going for the event and ran up a very fine score.

Peter managed to get his pre-amp going just before the R.D., then at the last moment it failed altogether. Yes, that sort of thing often seems to happen to most of us at times. Hope that you soon find the trouble, Peter.

Thanks for a mighty interesting letter, Peter, and by golly, that DX log of yours certainly makes our mouths water, that's for sure. 73, Mac.

YOUTH RADIO CLUBS

We seem to be a live issue, judging by recent correspondence. This is as it should be. The whole Amateur fraternity should debate the Youth Radio Scheme. Those who debate the issue should have certain information at hand, otherwise their debate could be merely an insincere justification of a desire to have the present frequencies exclusively for the use of Grandmasters and a few friends. For the debate, find the answers to these questions. Has the average age of Amateurs been rising? Has our percentage rate of increase approached that of most well developed countries? Is it not the stated official attitude that only large numbers will justify retaining frequencies? Where can you find the large number of new Amateurs?

The VK8 Y.R.C. Scheme continues on the move with new clubs and new ideas. In regard to clubs, the latest figures I have to hand show 28 clubs in N.S.W., 20 in Victoria, 14 in Tasmania, 7 in Queensland, and 1 in Port Pirie. My apologies to any others—I have heard of some indirectly. Can you make it definite? I would like to hear from you.

In regard to ideas, there are the Radio-Telephony Operator's Certificate and Radio-Telegraphy Operator's Certificate to encourage club members to make contact from their club station and learn correct procedure. Details can be had from BYA. Prices are also offered from cash deals for (a) sets of training charts to help club activity, (b) first to gain Intermediate, Radio-Telephony and Radio-Telegraphy Certificates, and (c) best set of constructional projects for Intermediate Certificate.

Club leaders will find the weekly publication "Understanding Science" has had some useful articles on elementary electricity and radio. The coloured illustrations and diagrams and training charts. It may not be easy to get back copies but Municipal Libraries may help. Article no. issues 1, 2, 3, 15, 20, 21, 23, 24, 25, 26, 27, 28, 40.

With the co-operation of officials concerned, Roger Davis went on the air as VK1RD on his 16th birthday. He has c.w. and a.m. on 80 and 40 at present and would appreciate a card.

Rex Black (BYA) is considering making a tape with colour slides on Y.R.C. Can you supply transparencies of interesting activities in your club? If so, get in touch with Rex—cost refunded, by the way.

Y.R.C. was officially blessed in the N.S.W. "Education Gazette" this month. Can you arrange that (with photos, etc.) in your own State? 73, VK1KM.

DX LADDER

	Countries	Zna	S.s.b.	W
	Cont.	Cont.	Cont.	Cont.
E. Trebilcock	261	269	40	—
D. Grandville	115	305	38	28
A. Westcott	83	159	31	8
M. Hillard	82	231	33	31
M. Cox	79	226	30	48
P. Drew	71	229	21	30
C. Abernethy	56	95	30	—
N. Harrison	40	129	30	5
L. Thomas	41	139	20	16
G. Earl	23	116	15	9
D. Goggins	10	82	7	3

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 Sub Editor: ALAN SHAWMITH, VK4SS (Phone 4-8538, 7 a.m.-4 p.m.)
 35 Whynot Street, West End, Brisbane, Qld.
 ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB EDITOR

Argument can be raised on almost any subject, but letters to hand this month seem to have concentrated their conditions on all bands during Sept. last have been really different. The S.P. and L.P. to Europe did open up, but has been rather like the past year. 14 Mc. has been bright at night, for a while around 1330-1300z, but few rare prefixes are audible. This is a vast change from 1867-1898 when 14 Mc. was open all day and 7 and 14 Mc. wide open all night.

Some speak of conditions in a sense of frustration, this is not the right approach, because nothing in life static and DX conditions are always in a state of immediate, or long-range alteration. They will be worse for a while yet, before improvement shows.

NOTES AND NEWS

Steve G8BVN R.S.G.B. Editor reports the following UQWUW on Whangai. It started up on 14 Mc. c.w. Might be a new country again. It was deleted from the DXCC list on 1/1/90. Z8UBB and Z8YUJ will DX-pedite to Z8T and Z8U during Jan. 1964, spending five days in each country. Contrary to the info in the American DX magazines QSLs for Angus Murray-Stone, Z8IAMS, MP4TAC, etc., should NOT go to Hammarby, but to R.S.G.B. Angus told me this over the air.

KHEDEY is not Hawaii, but Kure Is. is still a small atoll situated at the extreme western tip of the Hawaiian Islands. He is on, almost daily, on 16 Mc. c.w. and sometimes 7 Mc. He is acceptable for DX.C.C.

VAJAE is a European Russian, he is at the Mirny Base in Antarctica, and is acceptable for DX.C.C. He is on, most afternoons, 800z on 4050 kc. approx.

For those who follow Gus WABPD, his next burst of activity will be from BNI Nepal, but he may be QRT by the time you read this. St. Pierre Island Z8RHS has been heard on week-ends on 1400z kc. s.a.b. between 1600 and 1900 hrs. G.M.T. On other week days he was reported on 14330 kc. s.a.b.

FX1CZ, Mediterranean, is active as of now (3/18/63) and may continue into November. Try 1400z around 1400z, also s.a.b. and 7 Mc. c.w.

Several HB's are active from Thailand at night on 24 Mc. s.a.b. and c.w. around 1900z. It is reported that the ban on HB activity imposed by the North American F.C.C. would be lifted shortly.

Ascension Island: Z8DHV was worked on 1410-1420 kc. c.w. 2100-2200 hrs. G.M.T. QSLs for this station go via the R.S.G.B.

Oman: VS8ABV using the call sign VS8ABV/V890 was heard on 14130 kc. s.a.b. QSLs go to Box 490, Aden.

New Amsterdam: FB8ZZ is quite active 1130-1200 hrs. G.M.T. on 14030 kc. c.w.

FXVAKW is operating from a small island north east of Hawaii, using 14 bands, c.w. and a.m.

The following is by courtesy of the Florida DXer, Editor K4IF.

British Honduras: VP1TA is active afternoons on 21 Mc. s.m. Usually heard 2150-2130 kc. around 2000 G.M.T.

St. Vincent/Carriacou: A return trip to Carriacou will be made by Frank VP2GAC, who recently operated from the Grenada portion of the island as VP2GOC. The next call will be VP2SV/C/G. The significance of the rather bizarre call is as follows: VP2S signifies the St. Vincent, C shows that the station is operating portable on Carriacou, and G shows he is licensed from Grenada. S.A.E. is an absolute must for QSLs.

Swaziland: Rumor has it that Manchara will soon be deleted from DX.C.C.

Swaziland: Prefix will change from Z8T to B1.

Cretz Island: According to FB8ZZ, FB8WV will be active starting Jan. '64.

Aruba Certificate: PJ4AO says that the Aruba Certificate is available to those making contacts with three members of the Aruba Am. Radio Club which includes 80 per cent. of the active Aruba Hams.

Afghanistan: After leaving the Caribbean, KAUTE will fulfil a two-year assignment in Afghanistan, Y.A. land. He hopes to be on the air with his KW2M rig in the New Year. VPSDB is active on s.a.b. and c.w. on 7 and 14 Mc. Mainly on week-ends around 6500z.

QSL via W43YF (VK3TL.)
 Don MP4QNF in Qatar uses both s.a.b. and c.w. Try 14100 kc. around 1800z.

AP2AR is active nightly from Dacca. Mostly 14 Mc. c.w. (VK3TL.)

To hand are these items from Joe W4STGV, NCDXer JTICA is still begging for contacts on 14100 kc. around 1500z with some c.w. down the band. He says to QSL via Box 639, Ulen Blaster, also I.R.C.

875 is also the call for Burundi. 905 is still Rwanda.

South Sandwich Is. will be activated by FKXKL LUABAD. LU4QG and RCTA possibly during December.

V8ACR is improving and on the way back to Picairn.

W4TVC QSLs for long overdue QSOs are being distributed by DLSPF.

ST3TA is active on 14 Mc. s.a.b. new.

VQS will be visited by W4MLY around Nov. V2VVS works VKs regularly on 14 Mc. around 8000z.

Jersey Island: GC4LI can occasionally be heard around 1405 kc. 2000-2100z.

St. Pierre Is.: W4CPS using call FPAS is active working all bands, mostly c.w. Try the first 5 kc. of the c.w. bands.

Maldiva Is.: VS8MB puts out a strong, but rough signal on 14071 kc. around 1600z.

New Guinea: VK0AT works s.a.b. on 14 Mc. late afternoons.

Porto Coast: TUSAU is a new station. Try 14 Mc. c.w. and s.a.b. 2200z.

Rhodes Is.: SV0VQ and SV0VW will be active for about 18 months on s.a.b.

Willis Is.: VK0WQ seems to be getting into his stride a little, as he is active on both 7 and 14 Mc. c.w. and s.a.b. afternoons.

AMONGST THE VKs

VK3KE is mentioned often here, in letters from G. land, as one of the most consistent VK 7 Mc. signals, both long and short paths. How about some DX notes OM?

Ken VK3TL laments that not much of the overseas DX listed in "A.R." is worked here. More than you imagine is worked. Ken OM.

Eric VK4EL is reported QRT and wishes to sell gear.

Steve VK4VH reports from Antarctica to say his 80 mc. antenna disappeared in the last 110 m.p.h. blizzard. With continual sunshine coming up, the weather is getting warm: zero degrees.

Steve leaves Wilkes on 15th Jan., bound for home via the west coast, G.D.C., he hopes to take in Heard Is. on 1st Feb. and Kerguelin Is., 7th Feb. for a short burst of activity, arriving Melbourne 14th Feb. Steve is quite active late afternoons 7 and 14 Mc. when conditions are suitable.

Pete Drew, L621, has submitted an activities list so long it has had to be pruned somewhat. From the preceding list it would seem, geographically speaking, the VKs are better placed in relation to other continents and N/S route to Asia.

ACTIVITIES

Ken VK3TL wd. on 30 mc. phone: ACPT, G8EEM MP4QNF, PJ4AO, EL4BH, TUCAL, VK4QJ (Willis Is.), VPSDB (Grand Turk Is.), VR4CU, YN1JL, YN1JW, YS1LA, YS1JG, YS2BA, YN8RM, ZHICR, YOHIC, ISL mc. wk. A2P2 AP2AR, C2P2 (Island Is.) MP4QNF, T2W, T3J, T3PJ, VK4QJ (Willis Is.), 3L1P1 (Antarctic), many Europeans

Be QSLs for the month: U.S.A. W4SAB, OA2J, OZ2NU, PJ4AP, PU2CC, SA2TS, Don L621 is still actively SWFLNG, as evidenced by the following: 7 Mc. c.w.: W4, VY4AR, SM4AR, SM4AR, C2P2, G.D.C., YV5FI, LA2RQ (QSL via W4CTN), G3FDM, W5UJUP/KP4 14 Mc. c.w.: PK4AB, EA1BC, G4ZZA, OA4AM, G4CZ, K4CZ, AP2AR, ZK1BY, VY2EJ, HK3X, USR6C, T2PZ, UA1KA, HA7IH, KO8BO, XE1WF, VY2MC 14 Mc. s.a.b.: 4X4AS, 4X4DK, VK4QJ (Willis), VY2UJ, K4AC, 4S mc. c.w.: K17AUG. (And again, please Don—A1)

Peter Drew, L621 heard the following: 15 m.s.m.: AP2P, C2P2, CR4BROW, ZS1CD, ZEXJ, JASZ, ZSAG, SK2RZ, ZEXIN,

JA0UR, JA0OI, W63Y, JA4RKE, JASANC, JASVZ, s.a.b.: JA4OI: c.w. JASCKZ 30 m.s.m. VU2FP, 457Y, JA6KAA, OA4PZ, DJ, 17L, ZL, W, TG8US, VK8SB, OA4AG, ZS1CD, JACN, QK1AN, VU2TPZ, DL8OK, OH5SM, OH6MS, OH1PN, 9K2C, VU2FA, 457E, XZ, 3KCH, AP2NM, V84RH, K16EDS, KR6BE, 457E, KR6C, s.a.b.: AC3A, EF2QZ, MP4BHC, 11NAO, OA4VW, ONAMS, W, VE, T2HP, PK4AO, OA4GJ, VY2VW, VY2VW, VY2VW, OZ7FG, LA8LF, UP8PB, 15SCA, SM2JQ, 8AW, OE1ES, OZ5BW, OE1RZ, ON4DM, SM2CP, JTICA, 17TAL, VU2RN, KP2DM, HB0J, OE1ME, SM2GA, OH1SH, OH3VQ, OH1T, SN1MM, XW4AU, ACTA, T2HGA, XE1AZ, XE1KL, KM6C, K17JZ, JA1AG, KZ5LT, and many G, F, DJ, SM, FA6, 30 and 40 mc. c.w. a fine list of DX submitted, but too long to include.

RUMOUR

A report of Swiss origin, on future conditions, is not encouraging. 21 Mc. for long haul work is most uncertain—mostly only 14 Mc. will be open only at nights for intermittent periods. 7 Mc. is predicted good, after midnight.

My thanks once again to those worthy souls who contribute to this little total. W4VW, G8BVN, W4STGV, also VK3TL, L621, L621, and Leo Tully, 73, AI VK4BS.

—

AWARD HUNTERS CLUB

Have you been collecting awards? Maybe you are eligible for membership in the above club. Twelve active acceptance awards are necessary. All Oceania applications go to: AI Shawmith, VK4BS, 35 Whynot St., West End, Brisbane, Qld. Inc. Sec. A.E.C./Oceania.

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W.I.A. DX.C.C.

Listed below are the highest twelve members in each section. New members and those who total have been amended will also be shown.

PHONE					
Call	Con- No. files	Call	Con- No. files	Call	Con- No. files
VK4RU	3 389	VK1WL	3 211		
VK4MK	43 254	VK3ATN	35 204		
VK5AB	45 275	VK4HR	12 188		
VK4KH	51 255	VK4JZ	61 187		
VK4F7	51 255	VK4JZ	61 187		
VK5KW	4 311	VK3GB	50 183		

Amendment:
 VK4AGH 55 109

C.W.					
Call	Con- No. files	Call	Con- No. files	Call	Con- No. files
VK3KE	10 313	VK4AGH	71 248		
VK3CK	26 306	VK4HP	59 228		
VK4F7	29 305	VK3FH	15 228		
VK3GL	37 279	VK3BG	43 255		
VK3NC	19 368	VK3RX	23 230		
VK4RU	18 350	VK3YD	27 228		

Amendment:
 VK4RU 43 306 VK4APK 76 159

OPEN					
Call	Con- No. files	Call	Con- No. files	Call	Con- No. files
VK2ACX	6 300	VK3HG	3 369		
VK4RU	6 288	VK3NC	77 369		
VK4RU	22 380	VK3TA	43 255		
VK4MK	74 286	VK4HR	7 223		
VK4GJH	83 275	VK3Z	4 221		
VK4JRO	78 278	VY4WL	45 225		

Amendment:
 VK2APK 82 194

New Members:
 VK4WO 81 104 VK3HO 82 101

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Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

YOUTH RADIO SCHEME

Editor "A.R.," Dear Sir,

As the originator of the Youth Radio Scheme I should be grateful if you could afford me the opportunity to reply to the opinions expressed by Al Rechner, VK5ZCR, in September issue.

First, it is pleasing to find that someone is sufficiently interested and concerned about young people in question the wisdom of diverting their attention from education by instituting a Radio Club system in secondary schools. It is gratifying, also, to note that your correspondent is unobtrusively open-minded to request that someone should attempt to allay his fears.

If we examine Al's letter, it is obvious that he has made a strong point in stressing the need to improve educational standards so that young people can cope with the rapid changes in our modern society. As a teacher of over thirty years' experience I deplore the encroachment of tawdry, trivial and often degrading media which beset the younger generation to-

day and drastically undermine the effects of those who seek to improve cultural and educational standards. As a result of experience in organising hobby clubs in secondary school I feel that the development of such interests and activities can have a stabilising influence on young people and can fill the vacuum that would otherwise be occupied by less desirable occupations. A lesson with a supervised and progressive hobby is far less likely to engage in delinquent behaviour. I can quote many cases of lads whose behaviour and attitudes have changed materially after they joined a school hobby club.

Al admits that certain headmasters admit some improvement in the academic performance of Radio Club members, but reserves this authoritative opinion on the grounds that Amateurs have been in a better position to judge by observations over a period of years. It seems to me that there is some confusion and invalidity of argument on this point. I feel that the opinions of headmasters and teachers in schools where Radio Clubs have been established are certainly worthy of more consideration than your correspondent is prepared to admit. Also, as the Youth Radio Scheme has been operating for a short time, I submit that any conclusions made by observation of quite different situations must be invalid when offered as arguments against the Youth Radio Scheme of this Institute. I am quite willing to concede that over-enthusiasm in any direction can have adverse effects on educational progress at any level. However, I feel it is not with the activity itself but with the parents of the young people so affected. There must be many youths whose excessive participation in Boy Scout work has proved detrimental to their scholastic progress. However, one does not condemn the Boy Scout movement because of the failure of parents to guide their sons wisely. I think we can quite reasonably claim the same consideration for our Youth Radio Scheme.

Far from being a rival and a detriment to school education, the Youth Radio Scheme is designed to support and supplement the normal secondary courses. Perusal of the syllabuses will show that our Certificate requirements include passes in Mathematics and Science and there have been many instances reported by Club Leaders of Club members "pulling up their academic socks" in order to meet our Certificate specifications. Examination of secondary Science courses will reveal considerable overlap in topics in electricity, magnetism and Keith Howard's recent article in "Radio, Television and Hobbies" shows clearly the close relationship that exists between his Radio Club activity and the formal courses of the Science Department.

Last year one of my Club members attempted the Departmental Intermediate Certificate examination and was absolutely delighted when he discussed the Science paper, which contained questions in Electricity and Magnetism closely resembling those which he had been required to answer in the Elementary Radio Certificate written examination.

I might stress, also, that of the six members of the Youth Radio Scheme comprising in New South Wales, four are Education Department

teachers and the great majority of Club Leaders belongs to this profession. Also, both New South Wales and Victorian Education Departments have given their approval to the formation of Youth Radio Clubs in Departmental Schools, and, I can assure you, this permission would not be given without careful assessment of the value of such a move.

One of the important functions of our Youth Radio Clubs is to provide vocational guidance towards careers in Radio, Television and Electronics. With interested teachers as Club Leaders it is apparent that really interested boys can be directed into occupations where there will be round pegs in round holes and will enter those vocations with interests already established. It is obvious, too, that teachers in charge of High School Radio Clubs will encourage members to attain the academic standards required for the various occupations into which the boys will retrain after their period of study in hobby Radio to the stage where their studies suffer.

I should like to quote from an address presented to the Institution of Radio Engineers by Mr. S. O. Jones Managing Director of S.T.C. Today radio and electronics are expanding at a rate which amazes even the most blasé amongst us. It is opening up new horizons for mankind and there is now hardly an aspect of our daily lives which is not, in some way, influenced by the techniques and applications of this young branch of science. If the Youth Radio Scheme can help to make young people aware of these exciting developments and can direct the more able of its Radio Club members into these developing fields, I feel that our voluntary effort will have been worthwhile. If the leaders of the Soviet Union can appreciate and foster by governmental agencies the great potential talent in Radio and Electronics that exists among its junior citizens, surely our Australian young people are entitled to whatever help and encouragement we can give them in this direction.

As members of the Wireless Institute we cannot afford to ignore the advantages to be gained by fostering the Youth Radio Scheme. Already there has been a movement from the Youth Radio Scheme into the ranks of Associate and Full Members and, as time passes, this trickle could become a torrent. One of the stated aims of the Youth Radio Scheme is "to increase the membership of the Wireless Institute of Australia" by encouraging Youth Radio Club members to continue their association with the Institute by becoming financial members. No organisation can hope to expand without an influx of new members and only the most unthinking W.I.A. members will be content to enslave our organisation as a static body.

-R. C. Black (VK5YA), Supervisor, Youth Radio Scheme, P.O. Box 10, Federal Coordinator, Youth Radio Scheme

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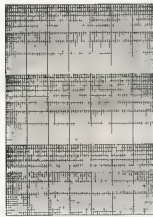
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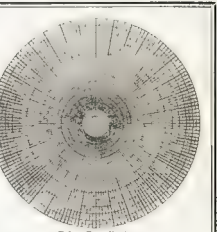
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Sub Editor: LEN POYNTER, VK3ZGP.

14 Esther Court, Fawkner, N.15, Victoria

ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB EDITOR

H.F.A.

From ZL comes news of an effort to work into VK from Don ZLIAQW, who was recently in Melbourne and discussed the matter with Don's wife. He has the N.Z.A.R.T. hopes to erect a high power phone station on Mt. Pirongia (3325 ft.). Antennae will be stacked 10E using a Navistar front-end converter into a Collins 75A4. A frequency close to the band edge is visualised and it is hoped to have some special characteristic on the carrier for positive identification whenever further details are known publicity will be given through "A.R." and if possible all Divisions will be notified.

There is also news that ZLA might be represented on 8 mX this year—a v.h.f. group has been formed in Danedin and more activity is promised. ZLIAW will be running s.b. on 2 mX with a 6/40 linear to a 6 over 6 skeleton slot. Apparently there is other 3 mX s.b. activity in ZL.

Readers of this page would be interested in any special activity contemplated during the forthcoming season. So if you have heard anything please let me know and I will publicise their efforts.

With the use of ex-commercial gear of the mobile variety each State will keep in mind the use of 52.03 Mc. here in VK3 as 8 mX a.m. net frequency and where possible continue to use same. The net is growing slowly and will move quite rapidly in a few more months as more crystals become available. If you're visiting Melbourne with these mobile units remember this frequency.

A small item I came across recently was that a line of chokes similar to the Ohmite series in the U.S. are available here in VK. They are known as Insulated Chokes Types CLA and CL-I and are available in a range from 0.02 microhenries, approx. self resonant freq. 440 Mc. with a reactance of 3,500 mH. to 7.5 microhenries, 76 Mc. at 275 mH.

Type CL-I components at 0.67 mH., 330 Mc. at 1,650 mH. to 34 mH., 46 Mc. at 175 mH. They are 1/2 inch diameter. Type CLA 3/16 inch long and CL-I is 1/4 inches long. Suggested circuit applications are such as filament chokes, plate loads, series and shunt peaking inductors, wave traps, parallel resonators, line terminating impedances, cathode chokes, antenna chokes and grid chokes. Price is around £10.00. A data bulletin is available through I.R.C.

Many thanks to Allyn 8ZDM for his efforts in the past from VK3. Welcome to the new writer, Graham 8ZDR. Scribes are requested to forward their notes to me no later than 2nd of the month. (Corresponding earlier for the January issue—Ed.) 75, ZZGP.

NEW SOUTH WALES

We received some news from Mac 8ZMO, who received it 10 days before inclusion in the last notes, so here it is now. The thing up this way was the break through to Sydney on 30th and 31st August, the world was in a bit of a flap. Scribes were requested to forward their notes to me no later than 2nd of the month. (Corresponding earlier for the January issue—Ed.) 75, ZZGP.

Latest from Sydney Suburbs is the news that Peter 8ZPB has graduated (?) to the chews Anonymous with the receipt of his new call sign, 8A3J. Len also turned the trick and has a new station, but has not received his new call at the time of writing.

Before we go any further, we'll just refresh your memories with the agenda of coming events, and keep them in mind. The Nov. Debuture will be by John 8ZQV on Nov. 1st for 432 Mc. and the Nov. Fox Hunt will be on the 20th, starting at Port Ryde, and ending at the Hill of the Fox. Dec. 1st, the Fox Party preceded by a short tx hunt, ending you know where. A Xmas Scramble will be on Dec. 23rd, and mark your calendar. Winner of the Sept. Fox Hunt, run by 8A3J,

8ANF, was Dave 8ZVW, followed by Tim 8ZTM for second place.

Since this will be my last set of notes I would suggest that any news you can go forward, be sent to Dave 8A3J, the V.H.F. Group Secretary, who will forward them to the right man, 75, ZZBL.

VICTORIA

Jack 8ZPG at Montrose is building up a beam and he should have a very good signal on 8 from his location. Ross 8ZNR is building up a portable rig for field days and it runs about 12w to a 2236 with carrier control modulation. Stan 8ZEP at Moe recently acquired a new rx, and Marcello 8ZIDMD, and would like information on it and if anybody could help they could pass it to 8ZNR, address in call book. Andy 8KAR at Kilda hopes to be on soon running 15w, to an 833 and the rx is a ABP conv. to a home-brew. 8ZAT, the Royal Melbourne Institute of Technology Radio Club, has been very active lately and they run about 70w, to a QQ620/40, the antenna is stacked cloveleafs up 100 ft. Also 8ZEM, the Footscray Tech. Radio Club, were on the air on Education Day and have a special QSL card for the event. Their gear was 15w, to a 2236, through a converter to a home-brew rx and stacked cloveleafs.

Dave 8ZOP at Moorabbin recently finished a 5 el. 2 mX beam and is working on a converter for 3 mX. Max 8ZCW, late of the Malles, is now operating from Auburn on 6 mX and he is still mistaken for a DX station. Bill 8ZED at Sandstone has built up a new 8 mX tx running 50w, to an 819, modulated by 807 and his new freq. is 81.28 Mc. (Up amongst the ZLA hills?) Bob 8ZRD at Hampton has been listening to 8 mX and it looks like we might hear Bob on 6 soon. Graham 8ZIX and Graham 8ABY have been plotting the future address. 8ZNR August 1st, so they hope to have a link between their QTHs on 3,300 Mc. 75, ZZNU

QUEENSLAND

The V.H.F. meeting was held on Friday, 30th Sept. with the usual members attending. Great interest was shown in a transistORIZED communication being given by 8ZAK. On Tuesday the 30th, DX came through well, with VK3 being worked for short intervals. A new station on 8 mX is John 8ZPH, although he has had no contacts for two years or so, this is the first time he has been on the air consistently.

Over the last few months certain people have been talking about c.w. practice. It appears to me that if the full calls want the 2 calls to do the Morse they should come on 8 mX occasionally and make some practice slow c.w. to a.m. contacts. About the only full call heard on 8 mX is 8ZKX and very rarely 8WQ, 8ZCZ and 8ZCZ.

Latest requirement by the multitude is ex talk two-way units. About six of these units have found their way into the hands of the amateur enthusiasts. 8ZNR has his unit converted and is dealing with gear for a good price. It seems hard to believe what that 3w. transceiver has done. With all the talk of morse and c.w. and at least two stations going to pay VK3 a visit at Christmas, we should not have any excuse for getting lost when Interstate, 72, ZZDF.

SOUTH AUSTRALIA

80 Mc.: The only opening on 80 Mc during August occurred at 1415 hrs. C.S.T. on 11th, 8Z3Y/4 to the Simpson Desert, near the V.K. border, was worked by local stations. Glen was using his mobile gear and a 6 el. beam. Later in the evening, this sporadic opening corresponded with very good tropospheric opening on 146 Mc. (q.v.)

144 Mc.: This band was in fine shape on the week end of 10th and 11th August. A very excellent tropospheric opening to VK3 permitted many contacts. This was the first occasion on which an Adelaide station worked into Melbourne, 8ZCZ, and 8Z3Y, the stations at Melbourne stations and they worked many locals, including 8NO, 8ZBR and 8ZDR. Other Victorian stations worked were 8ATN, 8ZCJ, 8CI and 8AGV.

Whilst the VK3 beacon station was responsible for the opening being noticed in the first instance, the beacon proved something of

a difficulty because Adelaide stations could not hear the VK3 stations owing to interference from the beacon. The beacon was subsequently closed down for the remainder of the opening, whereupon the QSOs came thick and fast.

82 Mc.: This band is moving slowly, however if the movement is maintained we should have several stations on by the New Year. Brian 8ZBR has a QQ620/40 tripler ready, also Geoff 8ZGP, Cor 8ZCZ can't make up his mind whether to use a 419B or a 417A in the 70 Cm. converter. (What a dilemma!) Brian 8TN is settling for 6CW4s in his 75, ZZCJ.

WESTERN AUSTRALIA

The level of activity on the v.h.f. bands in WA is improving considerably as the weather improves and people suddenly realise that the DX season is only a matter of months away. Tony 8ZDT has completed his new 8 mX rig and is now working on 8 mX. He is hoping to improve his tally of interstate stations this year. 8JW has made a welcome re-appearance on 8 mX after being off this band since 1948. Another newcomer to the band recently was Tom 8ZBU.

Two metres has been a little more active in WA than in the other States. It has been relayed on this band by Bob 8BE, using a b.f.m. The main activity on this band has been cross-band working, either 8-3 mX or 1-4 mX. Brian 8GVV was down from Geraldton recently and is determined to be active on 432 Mc next year. This 300-mile path should be very interesting as both 8-3 mX have been seen regularly over this path since last summer. A v.h.f. Field Day will be held on Sunday, 1st Dec. between 1000 and 1400 hrs. using the same route as before.

The last fox hunt was run by David 8DI and Tom 8DP with the fox hidden in Wembley Downs, some 7 miles from the start. After a few incidents that cannot be published here, the winners were Colin 8ZCI, Barry 8ZCF and Peter 8ZBK. 75, ZZDB.

TASMANIA

80 Mc.: Nothing out of the ordinary on this band of late. Still the same crew on around 1800 hours each night.

144 Mc.: Activity is well and truly on the increase on this band of late. Jan 8ZZ and Edgar 8YRY are now active in the south plus a return to the band by Lee 8ZC and Nick 8ZAT. Also Wolfe 8ZAG. In the north of the island, Den 8DK is conducting Morse practice on 8 mX and also re-broadcasting TWI around Launceston. Along the coast, Terry 8TT, Bob 8ZAA and Harry 8ZBN are active and I believe Max 8MX and one or two others are either on or interested. 75, ZZAY.

PAPUA

80 Mc.: No signals heard on this band during the month, despite a close watch for the first sign of the summer DX season.

144 Mc.: No activities on this band during the month.

Roy 8AU has gone and should be sporting a VK3 call from the Beja area in the near future. Many thanks for everything, Roy, we hope to hear from you in the coming season. 75, ZZBY.

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Activities for the month of Sept. have subsided somewhat, both from my own activities as well as from that of the members. Unfortunately, I had to make an urgent trip to VK4 early in the month and was off the air for a while. This, of course, leaves me with nothing to report on except my own activities, which are confined to operations on the 20 mx band and the building of s.a.b. equipment. The only member contacted for the month was 3MO, with Ian putting in a hefty signal here on 14 Mc. 73, 3ND.

Several enjoyable outings by the club in recent months have included a tx hunt and a ten-pin bowling night. The tx hunt was attended by some 38 persons in 13 cars, including Scouts from 8th Footcay and 1st and 3rd Brighton Troops. The next tx hunt is on Dec. 6 and with the warmer weather this could be an even better event, and I will be sorry to miss it but expect to be en route to VK6 land for four weeks on that date. However the hunt on 80 mhz is open to non members also and starts at 2000 hours.

A group of 36 members with YLs and XYLs (as applicable) attended the bowling night and it certainly showed up some dark horses—must have been practicing in their lunch time. It was a highly entertaining night.

At the club "night on the air" on Oct. 4 the younger members stirred up some DX although the presence of Maxine (Graham 3ZMQ's YL) may have had added the necessary glamour to attract the KHe—could be an asset in DX Contests. Graham, Jim 3KE added to the amusement by playing a tape recording of some of the night's discussions (?) he taped.

Hear that Bob JNZ is now allowed up and about. We all wish you a speedy recovery, Bob, and back to using your f.b. s.a.b. gear. Which reminds me, we had an interesting discussion night on s.a.b. and its construction, this month led by Bill JYE. 73, BARD.

Weather is tropical—not tropical—in VK4 once more; even in Amateur circles. It seems the bottom of the jet stream lowered over Brisbane shortly after we last went to press and more than one antenna suffered. Especially prominent was VK7's white flag, which was so prominent, to say the least, at any time. Before the wind we had quite a lot of rain but not as much as in VK3 where, "tis said, they no longer dig their gardens but stir them instead. The weather is said to be juliant, although OKK, ARH and other assorted minded sentinels about the rain. With the resultant crops, there should be the odd new bar on the air.

Then after the Sept. general meeting the lecture subject was—yes, you guessed—weather. Actually, the application of radio and radar to the gathering and transmission of weather data, as related by 4ZGM. The evening was unseasonably warm and pauses to remove the coat and loosen the tie and to restore modulation, which had failed due to bias build-up on the tonals, were greeted from the back benches by most uncharitable remarks about who should be prepared for the current

During the month we achieved our "by Christmas" target of 500 VK4 members. A lot of the new members are in the Branch clubs which are very active in training the newcomers. The Central Qld. Branch at Rockhampton is especially active with classes and some really good lectures are broadcast by the Branch station 4IR on Saturday afternoons. Are these heard in other Districts?

The Divisional station is looking up. Alf has invested in a tape recorder and now broadcasts taped news from the country boys. Seems they can all talk but can't write. Anyhow it's a good idea and goes over well when the tapes are up to scratch. The frequency response of the different recorders seems to vary somewhat.

Ross 4RO is still getting cards the easy way, via the services of a helpful pirate. Some are rare DX too. Are you sure you aren't asleep walking Ross? Seriously though, such things make one wonder about the mentality of the people who can keep on using someone else's call sign like that. Ted 4EJ is busy on a rx to end all rx's; a Rascal affair. Let's know how it performs Ted. The V.h.f. boys up Cairns have the fingers crossed for a Trans-equatorial breakthrough and have been hearing the northern scatter stations. 73. 4ZGM.

Jimmy 4H2 left home a few weeks ago (now don't get me wrong, he took his XYL Nell with him) and headed north to see how the

Other fellow lived, worked and played. He visited Viv ABJ (Bundaberg), Frank 478 (Gracemore), Claude 4UX (Ayr), Charlie 480 (Townsville) and others. Lewis LAWS, from Pt. Macquarie, was filling in a few days in the Sunshine State at Bundaberg and was on his way over to Viv ABJ to say a few words in the Kookaburra session when he ran over the road and upset a truck, sprang several vertebrae and was taken to hospital. He was referred to the owner, found himself speaking to a previous neighbour from his own home town. One never knows whom he is going to run into or over in this shrinking world.

The Bundaberg boys like to do the difficult first, the impossible will come a little later. Bill Sebbens and Roy Spottwood have been disturbing the ether in the 2 mx region, and it is reported that Les 4XJ in one attempt to pull Bill in stretched his converter to breaking point, but like the elephant's trunk it has now gone back to normal again. It must be good fun on this band as Bill 4WH is also thinking of joining this band any day now. So you boys who want your W.A.S. certificates for 3 mx there's a tip for the VKO

Frank 4FN tells of the fellow who constructed his t.v. antenna by welding empty beer containers together. Just as well it was not his car radio aerial or he would have

The boys of the Branch met in Maryborough last month to have a draw for some disposals gear, and some went home happy, others a little disappointed. Ah well, it may not be good for us if we got all we wanted in this life, although it is very nice if you can manage it.

Met Bert Ward, who is ex-GJWD, and who brought his 160 mx gear out with him and hopes to be using a VK4 call soon, so look out for him.

RECEIVED 10 10 1964

4FN's main activity is on 80 mhz with occasional bursts on 40. Frank has just finished an f.b. mod. monitor and noise and distortion meter. Old friends of Mark 4MJ will be sorry to hear that he has been very sick; get well soon OM, we're all pulling for you. Joe Waterworth has built up a code practice oscillator for the class he so ably conducts; but he is having no end of trouble trying to get the Gowler turrets in the new rx to go. Anyone with experience on these things could drop Joe a line—he'd sure appreciate it.

Lance 42AZ has a 3 Mc. phasing a.s.b. rig on 144 Mc., all home-brew, and working f.b. the linear should soon be completed using 6C4/6C5. He is on his way back from the States and the last of the 400 Mc. rig appears to have looked four continents good. Springfield gear. Riley 4SE has a new "Freeze" transistor p.a. for the mobile. Yours truly transmits the usual pair of unfinished projects (including a n.s.b. tuning fork circuit, all transistor exciter, which appears very promising. If I can get the bugs out of this, will probably knock out an article on the subject in the n.s.b. on 6 June. The cube twin inductor, n.s.b.

Arthur 4FE dropped in for a brief talk on the way from Nerramanton to Melbourne on Leave. During the past three weeks Jim 4H2 has been touring the best part of the State. Stayed a few days and had the time of his life imitating Donald Duck, then went up to Cairns to see Basil 4ZW.

Very pleased to hear that Jess, XYL of 4UX, has at last got her hearing back. Believe it took a bashing as Claude and Jim vied for the honour of the best talker. Say, who did really win?

The Z boys in Cairns have been asked to collect times and durations of the openings in the Tropical Scatter on v.h.f. and forward reports to the local university here. So far I have heard nothing in the openings.

Alan APS is busy overhauling the gear and be expects an extra crowd of Scouts on Jam-tuesday. Another welcome visitor turned up today in the person of Frank SAE, who has finished in Alice Springs and is touring the south looking for a nice place to settle in, maybe enjoy our climate. Bob W9WZ.

was handled in turn by Gary SEK, Al SZC and Cor SZKC. Gary discussed propagation and Al then stepped up and talked on aerials and feedlines. Gary came back and as an encore enlarged on transmitters. Al, not to be outdone, then stepped up and discussed the weather. Wind up the proceedings, Cor spoke at length on test equipment for the band. In this way the subject of 432 Mc. was covered in 1 1/2 hours, entirely, although all of the lecturers stressed that the course was not a complete one. At the subject if time had permitted. Judging by the rapt attention of the audience throughout the lecture, a keen interest has been aroused in the band. The V.h.f. Group is to be congratulated for their efforts and also as the choice of their speakers.

Among the visitors were Lindsay 20N, Er 3ANQ and Brian 52FT. We thank them for their company and hope to see them again.

sometimes
Cardinal. KKKU has just arrived back in V
after a business trip to W land. Had a ch
with Lindsay 2ON at the meeting. It appea
that he had just returned from VK6 aft
attending an eye doctor's congress for a few
night, and although he stressed his busy
had been able to find time to drop me a
chat to 0VK, 6RY, 6RU and 6MK. I suppose
he says the same to all the scribers that
meets, but he told me that he always re
the KKK notes and even went as far to s
that he has been able to read those
words. Sir, I hope the Editor reads this, h
might appreciate me more!

Listened in to a three-way contact on 7 M the other day between Joe SJT, Roy SDZ ("Buck" to you) and Frank SMZ. Intrigued me to note that the combined ages of the three was 196 years, but I won't tell any tales of school as to who made up the bulk of the

Received a letter from Fred, the father of John SZ-JH, telling me of John's unfortunate and nasty accident as he was leaving the Institute of Technology on the night of Thursday, 13th Sept. At the time of writing he is an inmate of Ward 3A, Royal Adelaide Hospital, East Wing, with a broken thigh and naturally will be off the air for some time. Sorry to hear it, John, and hope by the time

Talking of accidents, Jack SLR was mixed up in a smash over the week-end. He was crossing the South Road at about midnight and a motor bike ran into him. Jack's wife was badly knocked about and admitted hospital with a compound fracture of the ankle, but Jack came out of it unmarked.

The above two paragraphs brings to mind that Dr. Ross Adsy (ex-SAJ and one time VMA member of Council), a former reader in anatomy at the University of Adelaide, and now professor of anatomy and physiology at the University of California, has been given the first Charles Judson Herrick award for meritorious contributions to comparative neurology. Congratulations are the order of the day.

Noticed that Harry Gillard passed away this month. He will be better remembered for his photographic ability and knowledge, although he was keen on Radio and attended many meetings of the Division back a few years ago. Our sympathy is extended to his wife Elsie and also to Roger and Joyleen.

A certain pen-friend of mine in VKI will be interested and pleased to know that a committee has been proposed to liaise with the S.A. Education Department to organise Youth Radio training in VKs along lines which at the moment, must remain a deep and dark

Periodically a member will contact the Secretary or Treasurer about the non-delivery of the magazine, and more often than not the reason is that their subscription to the Division has lapsed. Sometimes of course the world has jammed up and a genuine mistake has been made clerically. However, if your magazine mysteriously stops arriving don't suspect black magic, personal animosity, discrimination, or the colour of your tie, but check up on the subscription receipt and if this is OK

start bouncing the ball. He was going terribly on his mobile phone, and I was going to go home. He was going the other way, although for a little while recently he looked like coming to an abrupt stop. The converter started playing tricks and the trouble was finally located in the transistor mixer section of the radio. The car battery, which had also almost reached the end of its life, the Nice signal Les Brian SOJ, when heard here was in the midst of organising a search party for the missing grid current to his final. Excuse me, I was not in the car, but the engine crossed just in case. Claude, 56% called me on his return from Perth and all points west, and brought me greetings and salutations from some character over there. Know me as Les, Nick, or hear from you Old, have been 100% there for 10 years.

The monthly general meeting of the VKS Division was held as usual in the clubrooms to a slightly below average attendance, about 110 members and visitors to be exact, and took the form of a three-man lecture on 4335 Mr. Organized by the V.h.f. Group. the subject

surrounded by so many stations calling you that my modesty did not permit me to barge in. Should be "shrinking violet—not pansy."

Although the Editor (may his red pencil never desert him) will probably sub this paragraph out on the score of untrue copy, I recently worked a W station. I did, true as true, and the said W asked me to put this line in the file for the Portland Adelaide Fire Station. If so, please pass on his 72. Well, to be truthful, I have not seen or heard Harry for so long that I don't think I could think of him. What? He is still in the Call Book, so by if any chance he is reading this, WSCIE wishes to be remembered; me too Harry, how is the fire business doing?

Johnny 5JW heard going lickety-split on c.w. close to the edge of 1 Mc. band the other early in the year. Though it was a commercial at first, I was thinking of giving him a shout, but again my modest 46 w.p.m. seemed so slow in comparison that I hesitated. What's that? Couldn't send at 4 w.p.m., let alone 40. G.P.O. is that so, that is all that you know. I could send 4 w.p.m. with my foot. That's what it sounds like? Oh! getting nasty now eh?

Jim 5JK, now out and about, is at the moment of writing lazing on the beach at Port Vincent, or Honolulu, or Walkiki, or somewhere. Anyway, that all goes to prove that he is completely recovered after his operation. Nice work, Jim.

Currie Bruce, one of his devil-may-care deeds for 1963, decided to pay his Amateur licence renewal at a Post Office, and was quite overcome to find that the officer in charge of counters had been pleased to oblige him. Unfortunately, just as the receipt was nearly finished, a senior officer came along and said "he doesn't send at 4 w.p.m., let alone 40. G.P.O. and Bruce, uncertain as to whether to write to Max 2ARZ immediately or to contact me, chose the easier way and tracked off to Accounts Branch Post Office Place. Things really warmed up here because the Accounts Branch had moved to Currie Street (probably a month or so ago). Bruce, by the time, was down at the Post Office and sent a stiff letter on cardboard to the V.I.P.s, receiving one week later a letter of regret and a statement that for the past few months it had been possible to renew the licence at any Post Office. He is now awaiting the usual follow-up letter telling him that no record of payment of his licence is available and that he will shortly be cancelled; shot at dawn, electrocuted, or possibly come to a sticky end. Bruce, and at least one VK3 who has been able to renew his licence at a P.O. and nothing further has happened. He hopes!

It would seem from the many rumours floating about that W.I.C.E.N. is in a somewhat poor shape. There are talks of resignations due to lack of co-operation from members. There are suggestions from members that W.I.C.E.N. needs new blood up top, many seem to think that it is resting on whatever laurels it has amassed. In fact from all the signs it definitely appears that W.I.C.E.N. is about to topple. This is a pity, although I would be surprised if it did. It has never quite reached the heights envisaged by its founder, Jim 5JK, but at least it had possibilities and it is to be hoped that someone will find the way through the thicket and set it back on its feet. I notice in my latest copy of "Info," the official journal of the Elizabeth Amateur Radio Club, that the N.S.W. N.R. has not been considered an activity of the Club, so apparently the rot has set in up there. As I said before, this is a pity, but to be quite fair, I suppose you may, but not entirely unexpected, 73, de SPS—Pansy to you.

WESTERN AUSTRALIA

Vic. 6VK has got the bugs out of the SDOs on a.s.b. Vic found that to use it as a linear amplifier, it is necessary to use a 1000 ohm resistor. Vic also mentioned that he had found the connections on the modulation transformer for 6W1 incorrect. Apparently a manufacturing error, which after correction, gave reports of broadcast quality.

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Have on hand a further report from 6YL/6RX combination. Latest is that a boy harmonic arrived recently. Congrats, and best wishes all round.

New arrivals bring to mind that Lionel Allen (ex WLA) will be transferred back from Cocos is, at Christmas time to this State.

As you are no doubt well aware, a.s.b. is claiming victory after victory. A fairly late addict is Ted 6JG of Brunswick, who has been doing some extensive work on this side of the business. One of the troubles which Ted was having recently was the instability in his v.f.o. variation in level and frequency, and so on. Some concentrated investigation on the v.f.o. side revealed a small compact nest of black ants costly enmeshed among the bits. Guess you need ant suppressors as well as carrier suppression. Ted, Trust all OK now.

Another one of the country boys paid us a visit recently, Cyril 6CN of Kellerberrin. Pleased to see you Cyril and I believe you have some nice gear that hasn't had much use for the last four months or so. Also a recent visitor from Geraldton was 6VY, who says thanks to the 80 mX gang for their efforts when the Industrial Exhibition gave an opportunity for the Geraldton boys to show the public what a Ham is.

Although people like Les 6WL and Alan 6AB are going sideband, we find that people like Cedric 6CD, who only recently got his full ticket, aren't taking to it. Cedric, who has a table-top rig, all bands, at home as well.

Advancing towards a full ticket is Bob 6ZCY. Bob is the way to go. I think you should understand the Wireless Bird paid a visit with the first harmonic, a boy, and this is liable to slow Bob up. Congrats all round anyway.

All visitors who have been into Jim 6RU's shack will know there is very little wall space available for hanging awards and cards and things. This is because most of the wall space is occupied by calendars donated by Uncle Dave in the States. They're not all the current year's, but some are quite old. Anyway, the whole point is that Jim recently won an award, the W.A.Z. Jim award from "CQ". Now you won't be able to get a wall certificate for Ted Jim, but what we do want to know is—where are you going to find room in the shack to hang it? 73, SLS.

TASMANIA

With our usual respect, Ian 7ZZ, still out of action. It is my pleasure to write these notes for the next time Ian comes back. I don't forget the Hamfest to be held on 2nd and 3rd Nov. at Campbell Town. This promises to be an evening of the best of the best. I don't see to tune up that mobile gear and come along. Bill 7TY has a very interesting device working on I.F. at the moment. The tx is completely electronically controlled, there being no carrier with no modulation and it is impossible to over modulate, the carrier being always 100 per cent filled. No other details to hand, but am assured that it is not the usual vox system.

VE3BEI, from London, Ontario, is teaching at the Hobart High School at the moment. Welcome to Tasmania and hope you have a pleasant one. The Royal Yacht Club transceiver under construction by this Division is just about ready for testing. Ted 7EJ finished his antenna coil and set it back on the air. He is getting much better and the unit seems easier to tune. Terry 7TT is building a 100 mX and I believe 7MX is getting the bug too. After a long absence, 7ZAG is with us again on 2, and Dave 7ZAY has a new rig going. Remember, 7.T.U. 73, ZEA.

NORTH-WEST ZONE

Firstly, I'm sure all will join me in congratulating Basil on getting his ticket. Already 7BL is well known on 40 and 80 mX, having made some 136 contacts in three weeks! Very good. 7AXL is also well known on 40 mX, having a half lattice filter to his rx, mainly to keep George 7XL from spreading all over the dial. I believe, Terry has his 322 rx going and hopes to have his a.s.b. rig up and running in the future. David 7MB is still "rig-less" at present, but a formidable a.s.b. rig is slowly but surely being built into a suitably sized cabinet. He is using the phasing unit at present on the air. Believe he really makes the a.m. boys look sick on the Sunday round-up when conditions are bad.

Kevin 7ZAH was heard in Launceston from Ulverston on the 6th. He has been about a record from these places. Meetings have been well attended lately, and another pleasing note is that our finances are still in a healthy state. Reports in November will roll up all who can. See you there, 73, ZBHR.

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